

# DIN EN ISO 13506-1:2017-12 (E)

## Protective clothing against heat and flame - Part 1: Test method for complete garments - Measurement of transferred energy using an instrumented manikin (ISO 13506-1:2017)

---

<b>Contents</b>		Page
<b>European foreword</b> .....		<b>4</b>
<b>Annex ZA (informative) Relationship between this European Standard and the essential requirements of EU Directive 89/686/EEC [1989 L399] aimed to be covered</b> .....		<b>5</b>
<b>Foreword</b> .....		<b>6</b>
<b>Introduction</b> .....		<b>7</b>
<b>1</b>	<b>Scope</b> .....	<b>9</b>
<b>2</b>	<b>Normative references</b> .....	<b>9</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>10</b>
<b>4</b>	<b>General</b> .....	<b>12</b>
<b>5</b>	<b>Apparatus</b> .....	<b>13</b>
<b>6</b>	<b>Sampling and test specimens</b> .....	<b>26</b>
	6.1 General.....	26
	6.2 Number of test specimens.....	27
	6.3 Size of test specimen.....	27
	6.4 Specimen preparation .....	27
	6.4.1 Conditioning.....	27
	6.4.2 Optional laundering.....	27
	6.5 Standard reference garment design .....	27
<b>7</b>	<b>Pre-requisites for products implementing this test method</b> .....	<b>28</b>
<b>8</b>	<b>Procedure</b> .....	<b>29</b>
	8.1 Preparation of test apparatus .....	29
	8.1.1 General.....	29
	8.1.2 Manikin sensor check.....	29
	8.1.3 Flame exposure chamber purging.....	30
	8.1.4 Gas line charging.....	30
	8.1.5 Confirmation of nude exposure conditions.....	30
	8.2 Specimen testing procedure.....	31
	8.2.1 General.....	31
	8.2.2 Dressing the manikin.....	31
	8.2.3 Recording the specimen identification, test conditions and test observations.....	31
	8.2.4 Confirming safe operation conditions and lighting of pilot flames.....	32
	8.2.5 Starting the image recording system.....	32
	8.2.6 Setting time for heat transfer data acquisition.....	32
	8.2.7 Exposure of the test specimen.....	33
	8.2.8 Recording of specimen response remarks.....	33
	8.2.9 Calculation of surface incident heat flux and transferred energy.....	33
	8.2.10 Still images.....	33
	8.3 Preparing for the next test exposure .....	33

<b>9</b>	<b>Test report</b> .....	<b>34</b>
9.1	General.....	34
9.2	Specimen identification.....	34
9.3	Exposure conditions.....	34
9.4	Results for each specimen.....	35
	9.4.1 General.....	35
	9.4.2 Heat flux data of each manikin sensor.....	35
	9.4.3 Transferred energy.....	35
	9.4.4 Energy transmission factor.....	35
	9.4.5 Other information that may be reported.....	36
9.5	Observations.....	36
	<b>Annex A (informative) Considerations for conducting tests and using test results</b> .....	<b>37</b>
	<b>Annex B (informative) Inter-laboratory test data analysis</b> .....	<b>38</b>
	<b>Annex C (normative) Calibration procedure</b> .....	<b>41</b>
	<b>Annex D (informative) Calculation of transferred energy and energy transmission factor</b> .....	<b>50</b>
	<b>Annex E (informative) Elements of a computer software program</b> .....	<b>53</b>
	<b>Bibliography</b> .....	<b>55</b>