

# DIN EN ISO 10863:2020-09 (E)

## Non-destructive testing of welds - Ultrasonic testing - Use of time-of-flight diffraction technique (TOFD) (ISO 10863:2020)

---

<b>Contents</b>		<b>Page</b>
	European foreword.....	4
	Foreword.....	5
<b>1</b>	<b>Scope</b> .....	<b>6</b>
<b>2</b>	<b>Normative references</b> .....	<b>6</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>7</b>
<b>4</b>	<b>General remarks on the capabilities of the technique</b> .....	<b>7</b>
<b>5</b>	<b>Testing levels</b> .....	<b>8</b>
<b>6</b>	<b>Information required prior to testing</b> .....	<b>9</b>
6.1	Items to be defined by specification.....	9
6.2	Specific information required by the operator before testing.....	9
6.3	Written test instruction or procedure.....	9
<b>7</b>	<b>Requirements for test personnel and test equipment</b> .....	<b>10</b>
7.1	Personnel qualifications.....	10
7.2	Test equipment.....	10
7.2.1	Ultrasonic instrument.....	10
7.2.2	Ultrasonic probes.....	10
7.2.3	Scanning mechanisms.....	10
<b>8</b>	<b>Preparation for testing</b> .....	<b>10</b>
8.1	Volume to be tested.....	10
8.2	Setup of probes.....	11
8.3	Scan increment setting.....	12
8.4	Geometry considerations.....	12
8.5	Preparation of scanning surfaces.....	12
8.6	Temperature.....	13
8.7	Couplant.....	13
8.8	Provision of datum points.....	13
<b>9</b>	<b>Testing of base material</b> .....	<b>13</b>
<b>10</b>	<b>Range and sensitivity settings</b> .....	<b>13</b>
10.1	Settings.....	13
10.1.1	General.....	13
10.1.2	Time window.....	13
10.1.3	Time-to-depth conversion.....	13
10.1.4	Sensitivity settings.....	14
10.2	Checking of the settings.....	14
10.3	Reference blocks.....	14
10.3.1	General.....	14
10.3.2	Material.....	14
10.3.3	Dimensions and shape.....	15
10.3.4	Reference reflectors.....	15
<b>11</b>	<b>Weld testing</b> .....	<b>15</b>

<b>12</b>	<b>Interpretation and analysis of TOFD images</b>	<b>16</b>
12.1	General	16
12.2	Assessing the quality of the TOFD image	16
12.3	Identification of relevant TOFD indications	16
12.4	Classification of relevant TOFD indications	16
12.4.1	General	16
12.4.2	TOFD indications from surface-breaking discontinuities	17
12.4.3	TOFD indications from embedded discontinuities	17
12.4.4	Unclassified TOFD indications	18
12.5	Determination of location	18
12.6	Definition and determination of length and height	18
12.6.1	General	18
12.6.2	Determination of length	19
12.6.3	Determination of height	21
12.7	Evaluation against acceptance criteria	22
<b>13</b>	<b>Test report</b>	<b>22</b>
	<b>Annex A (informative) Reference blocks</b>	<b>24</b>
	<b>Annex B (informative) Examples of TOFD scans</b>	<b>29</b>
	<b>Bibliography</b>	<b>42</b>