

# DIN EN 12613:2021-03 (E)

## Plastics warning devices for underground cables and pipelines with visual characteristics

---

<b>Contents</b>		<b>Page</b>
European foreword .....		3
<b>1</b>	<b>Scope</b> .....	4
<b>2</b>	<b>Normative references</b> .....	4
<b>3</b>	<b>Terms and definitions</b> .....	4
<b>4</b>	<b>Principle</b> .....	4
<b>5</b>	<b>Chemicals</b> .....	5
<b>6</b>	<b>Apparatus</b> .....	5
<b>7</b>	<b>Preparation of solutions</b> .....	6
7.1	1,2,4-Butanetriol stock solution, 1 mg/ml.....	6
7.2	Glycerol stock solution, 0,5 mg/ml.....	6
7.3	Standard glycerides stock solution, 2,5 mg/ml.....	6
7.4	Commercial mixture of monoglycerides .....	6
7.5	Calibration solutions .....	6
<b>8</b>	<b>Sampling</b> .....	7
<b>9</b>	<b>Procedure</b> .....	7
9.1	Operating conditions .....	7
9.2	Analysis of the calibration solutions.....	7
9.3	Analysis of the commercial mixture of monoglycerides .....	7
9.4	Preparation and analysis of the samples .....	8
9.5	Identification .....	8
9.6	Calibration.....	8
9.7	Column performance control .....	8
<b>10</b>	<b>Determination of results</b> .....	9
10.1	Integration of the peaks .....	9
10.2	Glycerol calibration function.....	9
10.3	Free glycerol .....	9
10.4	Glycerides .....	9
10.5	Total glycerol.....	10
<b>11</b>	<b>Expression of results</b> .....	10
<b>12</b>	<b>Precision</b> .....	10
12.1	Interlaboratory study (ILS).....	10
12.2	Repeatability, <i>r</i> .....	11
12.3	Reproducibility, <i>R</i> .....	11
<b>13</b>	<b>Test report</b> .....	11
<b>Annex A</b> (informative)	<b>Sample chromatogram</b> .....	12
<b>Annex B</b> (informative)	<b>Calibration function calculation</b> .....	20
<b>Annex C</b> (informative)	<b>Worked example</b> .....	22
<b>Annex D</b> (informative)	<b>Results of the interlaboratory trial</b> .....	24
<b>Bibliography</b> .....		27