

# DIN EN 1401-1:2019-09 (E)

## Plastics piping systems for non-pressure underground drainage and sewerage - Unplasticized poly(vinyl chloride) (PVC-U) - Part 1: Specifications for pipes, fittings and the system

---

<b>Contents</b>		<b>Page</b>
European foreword .....		4
<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>8</b>
<b>4</b>	<b>Symbols and abbreviations .....</b>	<b>11</b>
<b>4.1</b>	<b>Symbols .....</b>	<b>11</b>
<b>4.2</b>	<b>Abbreviations .....</b>	<b>11</b>
<b>5</b>	<b>Material .....</b>	<b>12</b>
<b>5.1</b>	<b>General .....</b>	<b>12</b>
<b>5.2</b>	<b>Use of mineral modifier .....</b>	<b>12</b>
<b>5.3</b>	<b>Pipe material .....</b>	<b>13</b>
<b>5.4</b>	<b>Fitting material .....</b>	<b>13</b>
<b>5.5</b>	<b>Fabricated fitting material .....</b>	<b>14</b>
<b>5.6</b>	<b>Utilization of non-virgin material .....</b>	<b>14</b>
<b>5.7</b>	<b>Sealing ring retaining means material .....</b>	<b>14</b>
<b>6</b>	<b>General characteristics .....</b>	<b>15</b>
<b>6.1</b>	<b>Appearance .....</b>	<b>15</b>
<b>6.2</b>	<b>Colour .....</b>	<b>15</b>
<b>7</b>	<b>Geometrical characteristics .....</b>	<b>15</b>
<b>7.1</b>	<b>General .....</b>	<b>15</b>
<b>7.2</b>	<b>Dimensions of pipes .....</b>	<b>15</b>
<b>7.2.1</b>	<b>Outside diameters .....</b>	<b>15</b>
<b>7.2.2</b>	<b>Out of roundness .....</b>	<b>16</b>
<b>7.2.3</b>	<b>Length of pipes .....</b>	<b>16</b>
<b>7.2.4</b>	<b>Chamfering .....</b>	<b>17</b>
<b>7.2.5</b>	<b>Wall thickness .....</b>	<b>17</b>
<b>7.3</b>	<b>Dimensions of fittings .....</b>	<b>18</b>
<b>7.3.1</b>	<b>Outside diameters .....</b>	<b>18</b>
<b>7.3.2</b>	<b>Design lengths (Z) .....</b>	<b>18</b>
<b>7.3.3</b>	<b>Wall thicknesses .....</b>	<b>19</b>
<b>7.4</b>	<b>Dimensions of sockets and spigots .....</b>	<b>19</b>
<b>7.4.1</b>	<b>Elastomeric ring seal sockets and spigots .....</b>	<b>19</b>
<b>7.4.2</b>	<b>Adhesive joint sockets and spigots .....</b>	<b>23</b>
<b>7.5</b>	<b>Types of fittings .....</b>	<b>24</b>
<b>8</b>	<b>Mechanical characteristics .....</b>	<b>27</b>
<b>8.1</b>	<b>Mechanical characteristics of pipes .....</b>	<b>27</b>
<b>8.1.1</b>	<b>General requirements .....</b>	<b>27</b>
<b>8.1.2</b>	<b>Additional mechanical requirements .....</b>	<b>28</b>
<b>8.2</b>	<b>Mechanical characteristics of fittings .....</b>	<b>29</b>
<b>8.2.1</b>	<b>Ring stiffness class .....</b>	<b>29</b>
<b>8.2.2</b>	<b>Additional requirements .....</b>	<b>29</b>

<b>9</b>	<b>Physical characteristics .....</b>	<b>30</b>
<b>9.1</b>	<b>Physical characteristics of pipes .....</b>	<b>30</b>
<b>9.2</b>	<b>Physical characteristics of fittings .....</b>	<b>31</b>
<b>10</b>	<b>Performance requirements .....</b>	<b>32</b>
<b>11</b>	<b>Sealing rings .....</b>	<b>33</b>
<b>12</b>	<b>Adhesives .....</b>	<b>33</b>
<b>13</b>	<b>Marking .....</b>	<b>34</b>
<b>13.1</b>	<b>General .....</b>	<b>34</b>
<b>13.2</b>	<b>Minimum required marking of pipes .....</b>	<b>34</b>
<b>13.3</b>	<b>Minimum required marking of fittings .....</b>	<b>35</b>
<b>13.4</b>	<b>Additional marking .....</b>	<b>35</b>
	<b>Annex A (normative) Utilization of non-virgin material .....</b>	<b>36</b>
<b>A.1</b>	<b>General .....</b>	<b>36</b>
<b>A.2</b>	<b>Own reprocessed material .....</b>	<b>36</b>
<b>A.3</b>	<b>External reprocessed and/or recycled materials with agreed specifications .....</b>	<b>36</b>
	<b>Annex B (informative) General characteristics of PVC-U pipes and fittings .....</b>	<b>38</b>
<b>B.1</b>	<b>General .....</b>	<b>38</b>
<b>B.2</b>	<b>Formulation characteristics .....</b>	<b>38</b>
<b>B.3</b>	<b>Creep ratio .....</b>	<b>38</b>
<b>B.4</b>	<b>Chemical resistance .....</b>	<b>38</b>
<b>B.5</b>	<b>Abrasion resistance .....</b>	<b>38</b>
<b>B.6</b>	<b>Hydraulic roughness .....</b>	<b>39</b>
<b>B.7</b>	<b>Diametric deflection .....</b>	<b>39</b>
	<b>Annex C (informative) Product standards .....</b>	<b>40</b>
	<b>Bibliography .....</b>	<b>41</b>