

# ISO/TS 6336-20:2017-11 (E)

## Calculation of load capacity of spur and helical gears - Part 20: Calculation of scuffing load capacity (also applicable to bevel and hypoid gears) - Flash temperature method

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
<b>1</b>	<b>Scope .....</b>	<b>1</b>
<b>2</b>	<b>Normative references .....</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions, symbols and units .....</b>	<b>1</b>
<b>3.1</b>	<b>Terms and definitions .....</b>	<b>1</b>
<b>3.2</b>	<b>Symbols and units .....</b>	<b>1</b>
<b>4</b>	<b>Scuffing and wear .....</b>	<b>5</b>
<b>4.1</b>	<b>Occurrence of scuffing and wear .....</b>	<b>5</b>
<b>4.2</b>	<b>Transition diagram .....</b>	<b>6</b>
<b>4.3</b>	<b>Friction at incipient scuffing .....</b>	<b>7</b>
<b>5</b>	<b>Basic formulae .....</b>	<b>7</b>
<b>5.1</b>	<b>Contact temperature .....</b>	<b>7</b>
<b>5.2</b>	<b>Flash temperature formula .....</b>	<b>9</b>
<b>5.3</b>	<b>Transverse unit load .....</b>	<b>10</b>
<b>5.4</b>	<b>Distribution of overall bulk temperatures .....</b>	<b>11</b>
<b>5.5</b>	<b>Rough approximation of a bulk temperature .....</b>	<b>12</b>
<b>6</b>	<b>Coefficient of friction .....</b>	<b>12</b>
<b>6.1</b>	<b>General .....</b>	<b>12</b>
<b>6.2</b>	<b>Mean coefficient of friction, method A .....</b>	<b>13</b>
<b>6.3</b>	<b>Mean coefficient of friction, method B .....</b>	<b>13</b>
<b>6.4</b>	<b>Mean coefficient of friction, method C .....</b>	<b>13</b>
<b>7</b>	<b>Parameter on the line of action .....</b>	<b>14</b>
<b>8</b>	<b>Approach factor .....</b>	<b>16</b>
<b>9</b>	<b>Load sharing factor, X .....</b>	<b>17</b>
<b>9.1</b>	<b>General .....</b>	<b>17</b>
<b>9.2</b>	<b>Spur gears with unmodified profiles .....</b>	<b>17</b>
<b>9.3</b>	<b>Spur gears with profile modification .....</b>	<b>18</b>
<b>9.4</b>	<b>Buttressing factor, X<sub>but</sub>, .....</b>	<b>20</b>
<b>9.5</b>	<b>Helical gears with 0,8 and unmodified profiles .....</b>	<b>21</b>
<b>9.6</b>	<b>Helical gears with 0,8 and profile modification .....</b>	<b>21</b>
<b>9.7</b>	<b>Helical gears with 1,2 and unmodified profiles .....</b>	<b>22</b>
<b>9.8</b>	<b>Helical gears with 1,2 and profile modification .....</b>	<b>22</b>
<b>9.9</b>	<b>Helical gears with <math>0,8 &lt; &lt; 1,2</math> .....</b>	<b>24</b>
<b>9.10</b>	<b>Narrow bevel gears .....</b>	<b>24</b>
<b>9.11</b>	<b>Wide bevel gears .....</b>	<b>24</b>
<b>10</b>	<b>Scuffing temperature and safety .....</b>	<b>26</b>
<b>10.1</b>	<b>Scuffing temperature .....</b>	<b>26</b>

<b>10.2</b>	<b>Structural factor</b> .....	<b>26</b>
<b>10.3</b>	<b>Contact exposure time</b> .....	<b>27</b>
<b>10.4</b>	<b>Scuffing temperature in gear tests</b> .....	<b>28</b>
<b>10.5</b>	<b>Safety range</b> .....	<b>28</b>
<b>Annex A (informative) Flash temperature formula presentation</b> .....		<b>30</b>
<b>Annex B (informative) Optimal profile modification</b> .....		<b>37</b>
<b>Bibliography</b> .....		<b>39</b>