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

Contents

Page

Foreword iv

Introduction v

1 Scope 1

2 Normative references 1

3 Terms and definitions, symbols and units 1
3.1 Terms and definitions 1
3.2 Symbols and units 1

4 Scuffing and wear 5
4.1 Occurrence of scuffing and wear 5
4.2 Transition diagram 6
4.3 Friction at incipient scuffing 7

5 Basic formulae 7
5.1 Contact temperature 7
5.2 Flash temperature formula 9
5.3 Transverse unit load 10
5.4 Distribution of overall bulk temperatures 11
5.5 Rough approximation of a bulk temperature 12

6 Coefficient of friction 12
6.1 General 12
6.2 Mean coefficient of friction, method A 13
6.3 Mean coefficient of friction, method B 13
6.4 Mean coefficient of friction, method C 13

7 Parameter on the line of action 14

8 Approach factor 16

9 Load sharing factor, X 17
9.1 General 17
9.2 Spur gears with unmodified profiles 17
9.3 Spur gears with profile modification 18
9.4 Buttressing factor, Xbut, ... 20
9.5 Helical gears with 0,8 and unmodified profiles 21
9.6 Helical gears with 0,8 and profile modification 21
9.7 Helical gears with 1,2 and unmodified profiles 22
9.8 Helical gears with 1,2 and profile modification 22
9.9 Helical gears with 0,8 < < 1,2 24
9.10 Narrow bevel gears 24
9.11 Wide bevel gears 24

10 Scuffing temperature and safety 26
10.1 Scuffing temperature 26

10.2 Structural factor 26
10.3 Contact exposure time 27
10.4 Scuffing temperature in gear tests 28
10.5 Safety range 28

Annex A (informative) Flash temperature formula presentation 30

Annex B (informative) Optimal profile modification 37

Bibliography 39