

ISO/TS 6336-21:2017-11 (E)

Calculation of load capacity of spur and helical gears - Part 21: Calculation of scuffing load capacity (also applicable to bevel and hypoid gears) - Integral temperature method

Contents		Page
	Foreword.....	v
	Introduction.....	vi
1	Scope	1
2	Normative references	1
3	Terms, definitions, symbols and units	1
	3.1 Terms and definitions.....	1
	3.2 Symbols and units.....	1
4	Field of application	6
	4.1 General.....	6
	4.2 Scuffing damage.....	6
	4.3 Integral temperature criterion.....	6
5	Influence factors	6
	5.1 Mean coefficient of friction, μ_{mC}	6
	5.2 Run-in factor, X_E	9
	5.3 Thermal flash factor, X_M	10
	5.4 Pressure angle factor, $X_{\alpha\beta}$	11
6	Calculation	12
	6.1 Cylindrical gears.....	12
	6.1.1 General.....	12
	6.1.2 Scuffing safety factor, S_{intS}	12
	6.1.3 Permissible integral temperature, ϑ_{intP}	12
	6.1.4 Integral temperature, ϑ_{int}	13
	6.1.5 Flash temperature at pinion tooth tip, ϑ_{flaE}	13
	6.1.6 Bulk temperature, ϑ_M	13
	6.1.7 Mean coefficient of friction, μ_{mC}	14
	6.1.8 Run-in factor, X_E	14
	6.1.9 Thermal flash factor, X_M	14
	6.1.10 Pressure angle factor, $X_{\alpha\beta}$	14
	6.1.11 Geometry factor at tip of pinion, X_{BE}	14
	6.1.12 Approach factor, X_Q	15
	6.1.13 Tip relief factor, X_{Ca}	16
	6.1.14 Contact ratio factor, X_ϵ	17
	6.2 Bevel gears.....	19
	6.2.1 General.....	19
	6.2.2 Scuffing safety factor, S_{intS}	20
	6.2.3 Permissible integral temperature, ϑ_{intP}	20
	6.2.4 Permissible integral temperature, ϑ_{intP}	20
	6.2.5 Flash temperature at pinion tooth tip, ϑ_{flaE}	20
	6.2.6 Bulk temperature, ϑ_M	20
	6.2.7 Mean coefficient of friction, μ_{mC}	20
	6.2.8 Run-in factor, X_E	20
	6.2.9 Thermal flash factor, X_M	21
	6.2.10 Pressure angle factor, $X_{\alpha\beta}$	21
	6.2.11 Geometry factor at tip of pinion, X_{BE}	21
	6.2.12 Approach factor, X_Q	21
	6.2.13 Tip relief factor, X_{Ca}	21
	6.2.14 Contact ratio factor, X_ϵ	22

6.3	Hypoid gears	22
6.3.1	General.....	22
6.3.2	Scuffing safety factor, S_{ints}	22
6.3.3	Permissible integral temperature, ϑ_{intP}	22
6.3.4	Integral temperature, ϑ_{nt}	22
6.3.5	Bulk temperature, ϑ_{M}	22
6.3.6	Mean coefficient of friction, μ_{mC}	23
6.3.7	Run-in factor, X_{E}	23
6.3.8	Geometry factor, X_{G}	23
6.3.9	Approach factor, X_{Q}	25
6.3.10	Tip relief factor, X_{Ca}	25
6.3.11	Contact ratio factor, X_{e}	25
6.3.12	Calculation of virtual crossed axes helical gears	25
6.4	Scuffing integral temperature.....	29
6.4.1	General.....	29
6.4.2	Scuffing integral temperature, ϑ_{ints}	29
6.4.3	Relative welding factor, X_{WrelT}	34
Annex A (informative) Examples		35
Annex B (informative) Contact-time-dependent scuffing temperature		44
Bibliography		49