Subject Index

A

 \mathbf{C}

Acceleration-deceleration tests,	Carbides, 249, 265, 321
167	distributions, 471
Aerospace engines, 354, 374, 391	spheroidal, 321
Aircraft engines, 131, 335, 354,	structure, 437
400 447	Carbon dioxide lasers, 471
409, 447	
Aircraft frame, 460	Carbo-nitride heat treatment,
AISI 52100, 279	293
Alumina inclusion, 70	Carbon, high, chromium bearing
AMS 5618, 437	steel, 202
AMS 5630, 437	Carbon nitriding, 202, 279
AMS 5898, 131, 354, 447	Carbon steel, 293
AMS 6278, 131	Carbon through hardening
AMS 6491, 131	steel, 279
Annealing, spheroidized,	Carburizing stainless steel,
249	374, 409, 460
— · ·	Case hardening, 293, 354
ASTM Subcommittee A01.28 on	Chromium corbides 471
Bearing Steels, 3	Chromium carbides, 471
ASTM standards, 39	Chromium, carbon, steel, 202,
A 295, 3, 27	216, 374, 437
A 485, 3	Chromium content, 437, 460
A 534, 3	Chromium molybdenum steel,
A 535, 3	391
A 866, 3	Cleanliness, 39, 55, 189, 202,
A 892, 3	249
B 117, 460	assessment, 30
E 45 13	macrocleanliness, 231
E 45, 13 E 1122, 13	super clean bearing steel, 87
E 1245, 13	Compressive stress, 321
ES-5a, 3	Continuous casting, 216, 231, 249
C 44 460	Cooling action, during
G 44, 460	
Austenite, retained, 279, 293	quenching, uneven, 265
Automatic EDX-analysis, 231	Copper sulfate exposure
Automotive applications, 279	resistance, 437
Automotive engine accessory	Corrosion resistance, 374, 391,
belts, 167	409, 437, 447
	Corrosion test, alternate
	immersion, 460
В	Crack examination, 511
	Crack growth, 152
	Crack initiation points, 216
Bainite, 87	Crack nucleation, 55, 109
BG 42, 471	Crack propagation, 55
	Cronidur 30, 131, 354, 447
Billet stage, porosities, 27	
Brittle flaking, 167	CSS-42L, 374

D	Fracture toughness, 293, 335, 374, 409
Deformation, 307	,
micro-plastic, 152	
Deoxidation products, 27	G
Diffraction-line width, 152 Dimensional stability, 293, 335	Grease, 167
Dislocations, 109	3.000, 107
Dissolution, 265	Н
Distortion, 265	TT 1 : -
Drive belts, engine accessory,	Hardening
Durability, 307	ability of, 321, 437 through-surface, 307
Dardonity, 307	Hardness, 293, 354, 447
E	deviations, 511
T11 . 511	hot, 374, 409
Eddy current, 511	Knoop, 471
Elastic properties, 511 Electric furnace, 3, 335	Heating, induction, 307 Heat resistance, 279
Electron beam remelting, 87	Heat treatment
C,	process, 354
F	response, 265, 437
Estimo	Hertzian loading level, 70 Hertzian zone, 55
Fatigue life, 55	Hoop stress levels, 131
limit, 87	Hydrogen embrittlement, 167
rolling contact, 109, 152	, ,
behavior prediction, 39	T
carbon steel, 279, 293	I
endurance limit estimation, 131	Image analysis, automatic, 13
laser glazings, 471	Impact resistance, 374
life, 202, 216, 249, 391	Inclusions, 3, 70, 109, 189,
life, austenite effects on,	202
265	assessment, 124 elastoplastic properties, 109
life prediction, quantitative, 55	nonmetallic, 13, 39, 87, 124,
material response, 152	249
nitrogen alloyed, 447	nonmetallic,
SAE 52100, 349	characterization, 231 nonmetallic, distribution,
short crack behavior, 70 superlattice steel, 499	Hertzian zone, 55
rotating bending, 202	nonmetallic, effect on rolling
spalling fatigue failure, 152	contact fatigue, 249
testing, 124, 189	nonmetallic, quantification, 27
Finite element method, 70 Flaking, 249	nonmetallic, size prediction, 124
brittle, 167	ratings, 13, 27, 87, 202
Forging techniques, 336	reducing, 189
440 C stainless steel, 460, 471	Induction heating, 307
440 N-DUR, 437	Inspection techniques, 335
Fracture load, 460	Interference fit, 131

J

JK chart ratings, 13

L

Laser glazing, 471 LM 12749, 471 Loading tests, 460 cyclic, 70 Lubricants and Lubrication, 447 boundary, 293, 447 clean condition tests, 249 clean oil, 279 contaminated, 279, 293 high temperature, 354 system development, 409

M

M50, 131, 354, 471, 499
M50 NiL, 131, 354, 374, 409
Magnetron sputtering system,
unbalance, 499
Manganese sulfide inclusion, 70
Martensitic steel, 321, 391, 437,
447, 471
Metal softening, 152
Microscopic examination, 189
Microstructure changes, 152, 167,
216, 265, 437, 447
MIL-B-6039, 460
MIL-L-87100, 409

N

Nano-indentation tests, 109
Niobium, 499
Nitrided steel, 391
Nitride inclusion, 202
Nitriding, solution, 354
Nitrogen, 437
Nitrogen-alloyed steels, 131, 354, 391, 447
Nitrogen martensitic steel, 391
Nondestructive tests, 511

0

Oil inlet temperatures, 131 Oxide, 13 inclusion, 202 Oxygen analysis, 189 Oxygen content, 39, 12, 202 super clean, 87

P

Peeling, 293
resistance, 279
Plasticity, 70
behavior, cyclic, 109
PWA-524, 409
Pyrowear 675 stainless steel, 409,
460

R

Resonances, 511 Rig test, 409, 447 Rollers, 307 Rolling contact fatigue, 109, 152 behavior prediction, 39 carbon steel, 279, 293 endurance limit estimation, 131 laser glazings, 471 life, 202, 216, 249, 391 life, austenite effects on, 265 life prediction, quantitative, material response, 152 nitrogen alloyed, 447 SAE 52100, 349 short crack behavior, 70 superlattice steel, 499 Rotating beam samples, 124

S

SAE 52100, 13, 216, 249, 307 Segregation, 265 Silicon, 279 Size distribution, 124 Skylube II, 409 Slag, top, control, 231 Soaking, 249 Sorbite structure, 307 Spalling, 55 fatigue fracture, 152 propagation, 447 Spectroscopy, resonance ultrasound, 511 Sputtering system, unbalance magnetron, 499 Stability, bearing, high dimensional, 321 Stability, dimensional, 293, 335 Stability, thermal, 447 Statistics of extreme, 87, 202 Stereology, 13 Stress profiles, residual, 131, 152 Stress relaxation, 293 Stress, residual, 216, 265, 354, 460 compressive, 307 SUJ2, 279 Sulfides, 13 Sulfur content, 39 Superlattice coating, 499

T

Thermal stability, 447
Through surface hardening, 307
steel, 249, 279, 437
Titanium, 499
content, 231
nitride inclusion, 70
Troosite structure, 307, 321
Turbine engines, 131, 335

U

Ultrasonic testing, 27
echography, 109
immersed, 231
resonance, spectroscopy, 511
Unbalance magnetron sputtering
system, 499

V

Vacuum melting, 335 Volumetric testing, 231

W

Water quenching, 307 Wear resistance, 447 Weibull distribution, 249, 447 White etching area, 109

X

XD15N, 391 X-ray diffraction, 152 X-ray spectrum analysis, 321