

INDEX

A

Absolute (dynamic) viscosity 48
Acids, as cleaning materials 634, 646-648
Actuators (see "hydraulic systems")
Additives 707-716
Alkalies, as cleaning materials 633-635, 648
ASTM Tests 43
D 88, Saybolt Universal Viscosity 46-47
D 91, Precipitation Number 72-73
D 92, Flash and Fire Points (COC) 66-67
D 93, Flash Point (PMCC) 68-69
D 95, Water in oil 76-77
D 96, Sediment and Water (USS modification) 74-75
D 97, Cloud and Pour Point 64-65
D 130, Copper corrosion from liquid petroleum products 192-193
D 189, Carbon Residue (Conradson) 84-85
D 217, Cone penetration of lubricating grease 134-135
D 217, Grease shear stability 142-143
D 287, API Gravity vs. Specific Gravity 60-61
D 445 and D 446, Kinematic Viscosity 48-49
D 524, Carbon residue (Ramsbottom) 84-85
D 566, Dropping point of grease 136-137
D 567, Viscosity Index 50
D 665, Rust prevention 80-81
D 874, Sulfated residue 86-87
D 877, Dielectric strength 88-89
D 892, Foaming characteristics of lubricating oils 104-105
D 942, Grease oxidation 174-175
D 943, Inhibited oil oxidation 118-119
D 971, Interfacial tension 62-63
D 974, Neutralization number 70-71
D 1092, Apparent viscosity of greases 162-163
D 1263, Leakage tendencies of wheel bearing greases 148-149
D 1264, Water washout 178-179
D 1367, Graphite abrasion 110-111
D 1401, Water separability 102-103
D 1662, Active sulfur in cutting fluids 216-217
D 1741, Functional life of ball bearing greases 172-173
D 1742, Oil separation from lubricating grease 156-157
D 1743, Corrosion preventive properties of greases 182-183
D 1831, Roll stability; modified roll stability 144-145
D 2161, Kinematic viscosity 48-49
D 2265, Dropping point of grease over wide temperature range 138-139
D 2266, Four-ball wear (modified) 130-131
D 2270, Viscosity index 50-53
D 2271, Hydraulic pump test 200-201
D 2272, Oil oxidation (RBOT) 120-121
D 2500, Cloud and pour point 64-65
D 2509, EP properties of greases 166-167
D 2595, Evaporation loss of grease 150-151

D 2670, Wear properties of fluid lubricants (modified), Falex/vee blocks 132-133
D 2711, Demulsibility characteristics of lubricating oil 100-101
D 2782, EP properties of lubricating fluids (Timken test) 122-123
D 2783, EP properties of lubricating fluids (4-ball test) 124-125
D 2893, EP oil oxidation 116-117
D 3520, Quench test by magnetic quencher 78-79
D 3705, Misting properties of lubricating fluids 112-113
D 3707, Storage stability of water-in-oil emulsions 204
D 3709, Storage stability of invert emulsions 205
D 4048, Copper strip corrosion (grease) 191
D 4049, Water spray-off resistance 180-181
D 4425, Oil separation from lubricating grease (Koppers method) 158-159
D 5182, Four-square gear oil tester (modified) 126-127
D 7043, Accelerated hydraulic fluid pump test 202-203
F-312, Particulate contamination of lubricating and hydraulic fluids (modified) 208-209

B

Bearing life (B-10 life, L_{10} life) 428-430
Bearing loads 414
Bearings, antifriction/rolling element 424-425
ball 425
cylindrical 454-455
mounting procedures 445
spherical 446
steels for 446
tapered roller 427
Bearings, plain/sliding 414
hydrostatic 423
journal 414
metallic alloys for 416
Mesta bearings 420-423
Morgoil™ bearing 420-422
nonmetallic materials for 464
Bernoulli's theorem 597
Boundary lubrication 415

C

Cleaning materials
acids 634
alkalies 633
corrosion preventatives 647
emulsions, aqueous 648
emulsions, solvent-diluted 648
hazards of 636-641
selection 649
solvents 646-647
Cleaning methods
abrasion 659
brushing 634
immersion, soak tank 634

immersion, vapor degreasing 635
spraying 659
Combustible liquids 646-647
Computerized lubrication schedules (CDLS) 304
Computerized maintenance management systems (CMMS) 309
Contact stress (see "Hertz stress")
Crankcase oil, SAE viscosity limits 59

D

Dermatitis, occupational 658
Detergents 633
Dynamic viscosity (see "Absolute viscosity")

E

Elastohydrodynamic lubrication (EHL/EHD) 448, 518-520
Elastomers 662-664, 711
Emulsifiers 633, 707
Emulsions, straight 614
Emulsions, inverted 81
Engler viscosity 55-58

F

Failure modes and effects analysis (FMEA) 234
Fire hazards
explosive range 638
flammability 645
flash point 68-69, 614-615, 638
Fire prevention 637
Flammable liquids 638
Fluid power systems (see "hydraulic systems")
Freons 646

G

Gaskets 567, 662
Gears
bevel 510-511
helical 510
herringbone 510-511
hypoid 371, 512
screw and nut 387, 510
spur 511
worm 369, 512
Grooving for grease-lubricated bearings 415-416
Grooving for oil-lubricated bearings 415-416

H

Hazard control 639
Health hazards
eye damage 636-637
inhalation 635-637
skin damage 637
Hertz stress (contact stress) 6, 20, 21, 23, 514
Hydraulic systems (see also "Pascal's Law")
accumulators 605
actuators 609
cavitation 612
cylinders 626
filtration 626
fluid conductors 599
fluids 614-615

flushing procedures	.622
fundamentals	.595
graphic symbols	.600
logic cartridges	.618
pumps	.600
reservoirs	.612
valves, directional	.607
valves, pressure control	.604
valves, proportional	.615
valves, servo	.615

K

Kinematic viscosity	48-49
---------------------	-------

L

L ₁₀ life (see "bearing life")	
Labeling	632
Lubricant classification numbers	301-302
Lubricant handling	305
Lubricant tests (see also "ASTM Tests")	
Bleed and evaporation test for greases	
AN-G-3A (modified)	152-153
Cohesion-adhesion (Former Bethlehem Steel)	186-187
Coking tendency of oil (USS)	90-93
Dynamic demulsibility (Union Oil Co.)	98-99
Emulsion characteristics of greases (Former Bethlehem Steel)	184-185
EP lubricant test rigs	128-129
Four-ball wear (USS S-205)	130-131
Grease mobility (USS)	160-161
Grease pumpability, Lincoln Ventmeter	164-165
Grease stability "Combo" (Former Bethlehem Steel)	188-189
ISO Cleanliness Code	210-213, 623-624
Low-temperature cycling (USS)	206-207
Measurement of dissolved gases in fluids	108-109
Mill environment corrosion (USS)	82-83
Modified roll stability	147
Oil spot	96-97
Oil-water ratio for metalworking fluids	218-219
Predictive/preventive maintenance	222-225
Pressure oil separation (USS)	154-155
Sheave throw-off (USS)	194-195
Silver corrosion, EMD LO	94-95
Spray retention (USS)	170-171
Static heat (USS)	140-141
Viscosity by different instruments	54
Viscosity equivalents	54
Lubrication survey for plant lubrication program	41, 303
Lubrication systems	
air-oil	588
circulating	561
direct feed	593
oil mist	584
parallel progressive dual-line	573
series-progressive single line	565
single line parallel injector	579
single line resistance	591-592

M

Maintenance	222, 227, 301, 523, 631
-------------	-------------------------

O

Oil contaminants, removal of	39, 552, 623-624
Oil, methods of application	
bottle oiling	30
chain oiling	30
circulating systems	31-32
collar oiling	30
hand oiling	28
once-through oiling	29
ring oiling	30
splash oiling	30
wick feed oiling	29
Oil reservoirs, self-contained	30-31
O-rings	671

P

Packing	670
Pareto chart	232
Pascal's Law	595
Piston rings	675
Poiseuille's equation	163
Predictive maintenance (PDM)	240
Protective coatings	345
PV value	680

R

Redwood viscosity	55
Repeatability	234-235
Reproducibility	234-235
Reynolds equation	652

S

Saybolt furol seconds	46
Saybolt universal seconds	46
Seals	
labyrinth rings	689
lip seals	678
materials for	662
mechanical face seals	677-678
Sendzimir mill	304
Soaps	11-12
Solvents	
blended	633
diphase cleaners	633
freons	655
kerosene	654
methyl chloroform (1,1,1-trichloroethane)	655
naphthas	633
perchloroethylene	633
Statistical process control	227-300
Synthetic lubricants	441-443, 613-615

T

TAG flash point testers	638
-------------------------	-----

V

Viscosity conversion tables	54
Viscosity index	50-53