

## Subject Index

### A

Abdominal surgery, 477  
 Acrylonitrile butadiene styrene,  
     370  
 Activation energy, 240  
 Aflas, 385  
 Age resistance, 385  
 Aircraft, KC-135 test, 170  
 AL-6XN, 157  
 Aluminum, 170, 283, 297  
     alloys, 147  
     anodized, 137  
     burn model, 258  
 Anesthesia, 477  
 ASTM standards, 34, 108, 258,  
     319, 411  
     D 240, 421  
     D 2512, 421  
     G 63, 458  
     G 72, 421  
     G 86, 359, 421  
     G 94, 147, 458  
     G 124, 147

### B

BAM impact test apparatus, 108  
 Bismaleimide, 421  
 Bond Number, 272  
 Brazed aluminum heat exchangers  
     (BAHX), 283  
 British Standards Institute, 319  
 Breathing devices  
     polymers for, ignitability, 359  
     SCUBA, 34  
 Burn-out testing, 108  
 Burn rate, 122, 370  
 Bypass valves, 432

### C

Cardio-pulmonary resuscitation,  
     25

Cobalt, 157, 170  
 Combustion, 93, 147, 157  
     aging and, 385  
     D 240, 421  
     heat of, 319, 421  
     inhibition mechanisms, 297  
     microgravity, 170  
     nonmetallic materials, 370  
     promoted, 71, 240, 283  
     promoted ignition-  
         combustion, 189  
     stainless steel alloys, 203  
     steady-states, 272  
 Compatibility test data database,  
     need for, 458  
 Composites, 421  
 Compressed Gas Association,  
     34, 297  
     Pamphlet G-4.4, 432  
 Compression  
     adiabatic, 93, 432  
     heat of, 93  
 Contamination control, SCUBA  
     gear, 34  
 Copper, 170  
     alloys, 147, 157  
 Cotton, 17

### D

Database, materials for oxygen  
     service, 458  
 Defrosting operation, 445  
 Distance/volume pieces (DVPs),  
     93

### E

Elastomers, 385, 411  
 Emergency oxygen training, 25  
 Endotracheal tube material  
     combustion, 370  
 EPDM, 319, 359  
 Epoxy composites, 421  
 Evaporation, 445

**F**

Fatigue, 42  
 Federal Institute for Materials  
 Research and Testing, 108  
 Fires, 93, 137, 157, 403  
   aluminum, 258  
   check valves, 53  
   endotracheal tubes, 370  
   extinguishing, 17  
   flame-spread processes, 283  
   flame-spread velocity, 370  
   metals, 122, 203, 225, 240  
   PTFE-lined flexible hose, 58,  
     93  
   regulator, 5  
   safety, 370, 477  
   SCUBA gear, 34  
   suppression, hypobaric  
     oxygen-enriched  
     atmospheres, 17  
 First aid, 25  
 FKM elastomers, 350  
 Flammability, 53, 137, 257, 370,  
   432  
   aluminum, 258, 297  
   elastomers, 350  
   intestinal gases, 477  
   limits, stainless steel, 203  
   metal, 122, 147, 157, 170, 225,  
     240  
   nickel-based alloys, 189  
   PTFE-lined flexible hose, 58, 93  
 Flow control, 432  
 Fluorel, 319, 350, 385  
 Fluorelastomers, 385, 411  
 Fractography, 42  
 Fuel cell materials, 385

**G**

Gas chromatography/mass  
 spectrometry, 403

**H**

Hardness, 385  
 HAYNES alloys, 157  
 Hazards analysis, 458  
 Hose, flexible, 93  
   PTFE-lined, 58  
 Hydrocarbons, 58, 297

Hydrogen, 477  
 Hydrogen-assisted cracking, 42  
 Hypobaric oxygen-enriched  
 atmospheres, 17

**I**

Ignition  
   aging and, 385  
   autoignition, 319, 359  
   autoignition temperature, 421  
   G 72, 421  
   G 86, 359, 421  
   mechanism, 137  
   metals, fundamentals, 272  
   nitrous oxide and ignition  
     source, 477  
   promoted, 122, 157, 283, 297  
   promoted ignition-  
     combustion, 189  
   resistance, 93, 137, 272, 411  
 Impact, mechanical, 319  
   D 2512, 421  
   G 86, 359, 421  
 Impact, particle, 137, 272, 432  
 Impact system, gaseous oxygen,  
   108  
 Infrared analysis, 403  
 International Organization for  
 Standardization, 108  
 Iron rod burning, 122, 240

**K**

Kalrez, 385  
 KC-135 test aircraft, 170  
 Kel-F, 58, 319  
 Kinetic analysis  
   iron rod burning, 240  
   modeling, aluminum, 258  
 Kydex, 370

**L**

Langmuir-Hinshelwood model,  
   258  
 Langmuir-Hinshelwood-Hougen-  
 Watson mechanism, 240

**M**

Marangoni Number, 272

Medical applications, 5, 25

anesthesia, 477

endotracheal tube material  
combustion, 370

Melting rate, 122

Metallurgical failure modes, 42

Metals, 5, 42, 147

alloys, 147

combustion, 170, 225

flammability, 122

flammability limits, stainless  
steel, 203

G 94, 147, 458

G 124, 147

ignition fundamentals, 272

iron rod burning, 122, 240

promoted combustion, 71

stainless steel, 53, 58, 147,  
157, 170, 203

Methane, 477

Migration, oil, 445

Modeling

aluminum burn, 258

metals ignition, 272

Molybdenum, 225

Monel K-500, 170

## N

National Aeronautics and Space

Administration, 42, 258

KC-135 test aircraft, 170

National Fire Protection

Association, 17, 34

Neoprene, 319, 359, 385

Nichrome wire, 297

Nickel alloys, 147, 157

binary alloys, 189

Nitrile, 359, 370

butadiene, 411

Nitrous oxide, 477

Nitrox, 34

Nylon, 319

## O

Occupational Safety and Health

Administration, 25

O-rings, 53, 385, 411

Oil migration, 445

Outgassing properties, 403

Overload failure mode, 42

## P

Packing, structured, 445

Particle impact, 137

Perfluorelastomers, 411

Phase boundary reaction,  
aluminum burn, 258

Phenolic composites, 421

Photodetector, 283

Piping code, 5

Pneumatic impact, 108

Polycarbonate, 370

Polymers (See also specific types),  
225, 319

breathing-air devices, 359

characterization, 403

lined flexible hose, 93

valve parts, 53

Polytetrafluoroethylene, 58

Polyurethane foam, 17

Polyvinylchloride, 370

Pressure threshold value, 71

Promoted combustion, metals, 71

## R

Regression curves, 137

Regression rate, 122

Regulators, 108

Residue, nonvolatile, 34

Rod burning, 122, 147

Rubber (See also specific types),  
319, 359, 370, 385

## S

Scanning electron microscope, 42

SCUBA diving, 34

Seal configuration tester, 411

Sealing products, 350

Silicon, 225

Silicone, 53, 359, 411

rubber, 370

Stainless steel, 53, 58, 147, 157

304, 203

308, 203

316, 203

combustion testing, 170

Stress corrosion cracking, 42

Surface alloys, 147

Surface composition, polymers,  
403

## 492 FLAMMABILITY AND SENSITIVITY OF MATERIALS IN OXYGEN

Surface finish, stainless steel,  
203

### T

Tensile strength, 385  
TFE, 53, 319  
Thermal analysis, 403  
Thermal inertia, 272  
Thermodynamic analysis,  
aluminum burn, 258  
Threshold pressure, 272, 283  
Titanium, 170  
Tubing wall thickness, 203  
Tungsten, 225  
Turbopumps, 189

### U

Ultrasonic transducer, 122

### V

Vacuum evaporation, 258  
Valves, 108  
ball, 5  
bypass valves, 432  
check, 53  
process control, 432

Vanadium, 225  
Vespel SP-21, 319  
Viton, 53, 319, 350, 359

### W

Water demand, fire suppression,  
hypobaric atmospheres, 17  
Wearability, 411  
Weld filler material, 157  
Workplace safety, 25

### X

X-ray photoelectron microscopy,  
403

### Z

Zinc, 225  
Zytel, 359