

## Subject Index

### A

- Acrylonitrile butadiene, 43
- Adiabatic
  - compression, 60, 87, 381, 414, 489, 506
  - conditions, 367
- Advanced Launch System, 463
- Airway fires, during surgery, 157, 168
- Aluminum, 313, 338
  - 2219, 367, 381
  - 6061, 354
- Aluminum-lithium
  - alloys, 126, 216, 381
  - 2090, 193, 240, 367, 463
  - 8090, 193, 240, 367, 463
  - WL049, 193, 240, 367, 463
- Artificial intelligence, 270
- ASTM standards
  - D 2512: 126, 260
  - G 72: 75
  - G 86: 126
- Autogenous ignition equipment, 75
- Autogenous ignition
  - temperature, 43, 489, 506
  - G 72: 75
- Autoignition, 75
  - polytetrafluoroethylene, 399
  - temperature, 43, 489, 506
- Automation
  - autogenous ignition equipment, 75
  - liquid hammer force prediction, 414
  - neural network analysis, 270

### B

- Beryllium, 354
- Bomb test, 489, 506
- Brass, 338
- Bronze, aluminum-, 354
- Burn predictions, 270
- Burn propagation behavior, 326, 453 (See also Flame spread)

### C

- Carbon steel, 326
- Centrifugal compressor, 528
- Chemical analysis, 519
  - thermochemical methods, 60
- Cleaning, 528
  - liquid oxygen component, 519
  - LOX CLEAN products, 519
- Clothing, flame resistant, 29
- Cloths, LOX cleaning, 519
- Combustion
  - endotracheal tubes, 157, 168
  - fundamentals, 7
  - nonmetals, 179
  - pressure effects on, 179
- Combustion, promoted
  - aluminum, 313
  - aluminum-lithium alloys, 216, 463
  - beryllium, 354
  - Hastelloys, 270
  - high-surface-area materials, 338
  - iron, 298
  - lead-tin binary alloys, 260
  - metals flammability, 453
  - phase, liquid, metals, 313
  - phase, vapor, metals, 313
  - precipitation hardened engineering alloys, 288
  - silicon nitride, 354
  - titanium, 313
  - wire mesh, 326
- Combustion, turbopump, 556
- Commissioning, compressor, 528
- Compatibility, oxygen (See Oxygen compatibility)
- Compressible flow, 399
- Compression, 381
  - adiabatic, 60, 87, 367, 414, 489, 506
- Compressors, oxygen, 528
- Computers
  - ignition equipment, automation, 75
  - liquid hammer force prediction, 414
  - neural network analysis, 270

Copper, 338  
alloys, 556  
100, 326

D

Deformation characteristics,  
metal specimens, 381  
Deformation process,  
completion, 367  
Differential scanning  
calorimetry, 43  
Diluents, 179  
Drop plummet energy, 87

E

Elastic modulus, 87  
Electronics, contamination, 519  
Endotracheal tubes, 168  
laser resistant, 157  
Energy loss, total, 87  
Engines, rocket  
component failure, 414  
Vulcain European, 475

F

Fabrics, flame resistant, 29  
Failure analysis, 216  
Flame emissions, 43  
Flame penetration test, 29  
Flame-resistant fabrics, 29  
Flame spread, 7, 326, 354, 453  
endotracheal tubes, 168  
polymers, 179  
rates, 179  
Flammability  
endotracheal tubes, 157, 168  
equipment automation for  
testing, 75  
flame propagation rates, 354  
high-surface-area materials,  
338  
lead-tin alloys, 260  
metals, assessment, 453  
nonmetals, 179  
parameters affecting, 7  
polymers, 43, 179

precipitation hardened  
alloys, 288  
protective clothing, 29

Flourel, 75  
Fluid mechanics, 399  
Fourier transform infrared  
spectrometry, 43  
Frictional heating, 453

G

Gaseous oxygen  
applications, Hastelloy, 270  
impact test, 193, 240, 260, 463,  
489  
iron combustion in, 298  
systems, 453  
Generator valves, 475  
Glassman criterion, 313  
Gradient tests, gravitational, 298  
Gravimetric technique, 313  
Gravitational gradient tests, 298

H

Hammer forces, liquid, 414  
Hastelloy, 270  
Heat exchanger, 556  
Heat release tests, 7

I

Ignition  
auto-, 43, 75, 399, 489  
endotracheal tubes, 157, 168  
equipment, 75  
gaseous oxygen pneumatic  
impact, 60, 489  
hammer forces, 414  
lead-tin alloys, 260  
low volatility materials, 7  
mechanical impact, 249,  
260, 463  
aluminum alloys, 193,  
367, 381  
mechanical impact  
sensitivity, 87  
G 86: 126  
metals, 270, 288, 354, 453, 556  
oxygen concentration effects  
on, 179  
polymers, 43, 179

- polytetrafluoroethylene, 399  
 pressure effects on, 179, 414  
 protective clothing, 29  
 ranking materials by, 326, 506  
 temperature, 43, 75, 489, 506  
 Ignition-Combustion, promoted, 270, 288  
 Impact tests and analysis  
     gaseous oxygen pneumatic, 60, 489  
     liquid oxygen, 506  
     mechanical, 87, 126, 240, 260, 463  
         aluminum alloys, 193, 367, 381  
         specimen-absorbed energy, 381  
     open cup, 193, 240  
     particle, 453  
     pressurized, 193, 240  
     sensitivity threshold  
         D 2512; 126  
 Inconel 718, 288  
 Infrared absorption spectroscopy, 43  
 Inhalators, 546  
 Iron, 298
- L**
- Laser resistant endotracheal tubes, 157  
 Lead, 260  
 Lead-tin alloys, 260  
 Limiting oxygen index (LOI), 7, 168  
 Liquid hammer forces, 414  
 Liquid oxygen  
     component cleaning, 519  
     impact test, 193, 216, 240, 260, 381, 463, 489, 506  
     systems, 414  
 Liquid phase burning, 313  
 Low volatility materials, combustion fundamentals, 7  
 LOX CLEAN products, 519
- M**
- Mass burning, 7  
 Mechanical impact test, 87, 126, 193, 240, 260
- aluminum alloys, 367  
 aluminum-lithium alloys, 463  
 nonmetallic materials, 489  
 specimen-absorbed energy, influence of, 381  
 temperature increases during, 367  
 Metallography, 240  
 Metals (See also specific types)  
     burn propagation behavior, 326  
     combustion, 216, 298, 313, 326, 463  
     combustion fundamentals, 7  
     compatibility, oxygen, high surface area materials, 338  
     flame propagation rate, 354  
     flammability, 260, 288, 453  
     flammability hazards, 453  
     gravimetric combustion technique, 313  
     gravitational gradient test, 298  
     hammer force reduction, engine, 414  
     ignition, 260, 288, 556  
     liquid oxygen impact, 26  
     mechanical impact, 126, 193, 240, 260, 367, 381, 463  
     microgravity combustion test, 298  
     precipitation-hardened alloys, 288  
     structured packing, 338  
     turbopump and heat exchanger, 556  
     Vulcain European rocket engine, 475  
     wire mesh burn propagation, 326
- Microgravity, 298  
 Monel 400, 326  
 Monel turbopump assembly, 556
- N**
- Neoprene, 75  
 Neural network analysis, 270  
 Nickel  
     alloys, 354, 556  
     200, 326  
 Nonmedical inhalator users, 546

Nonmetallic materials, 43, 179, 354 (See also specific types)

autogenous ignition equipment, 75

combustion, 7

endotracheal tubes, 157

fluid mechanic analyses, 399

pneumatic impact test, 60, 489

thermodynamic analyses, 399

Vulcain rocket engine, 475

Nylon 66, 75

## O

Open cup impact test, 193

Optical systems, 519

Oxygen concentration, effects on ignition and flame-spread, 179

Oxygen index, 7, 506 limiting, 168

## P

Packing, structured, 338

Particle impact, 453

Penetration test, flame, 29

Photoiodide detectors 43

Pneumatic impact test, 60, 489

Polyethylene, 43

Polymers, 43, 179 (See also specific types)

combustibility, 7

Polytetrafluoroethylene, 43, 399

Portable emergency oxygen inhalators (PEOI), 546

Prediction, burn, 270

Pressure, oxygen

effects on combustion, 298

effects on ignition and

flame-spread, 179

high, 60, 399, 414, 489, 556

rankings, based on minimum, 326

threshold, 216, 260

Pressurization, rapid, dead-end tube, 399

Protective clothing, flame resistant, 29

Pyrolysis, 43

## R

Ranking

tests for, comparison, 506

wire mesh, by pressure

minimum and

consumption rate, 326

Reaction mechanisms, 216

Reaction sensitivities, 193

Rocket engines

component failure, 414

Vulcain European, 475

Rod and strip packing, oxygen compatibility, 338

## S

Scanning electron microscopy, 216

Silicon nitride, 354

Silicon photoiodide, 43

Solders, 260

Stainless steel, 326, 338, 399

17-4PH, 288

304, 326

316, 326

Standards (See also ASTM standards)

inhalator training course, 546

Steel alloys, 354

Striker pin, 87

Strip and rod packing, oxygen compatibility, 338

Surface area effect, 338

Surgery fires, endotracheal tubes, 157, 168

## T

Thermal diffusivity, 179, 556

Thermochemical methods, 60

Thermodynamics, 399

Tin, 260

Titanium, 313

Training, portable inhalator use, 546

Tubes, dead-end, pressurization analyses, 399

Turbopump, oxygen, 556

V

- Valves, 475
- Vapor phase burning, 313
- Vespel SP21, 75
- Volatility materials, low, 7

Vulcain European rocket  
engine, 475

W

- Wire mesh, 326