COURSE OVERVIEW HE1022

Introduction to Process Safety Management (PSM)

Course Title

Introduction to Process Safety Management (PSM)

Course Date/Venue

Session 1: January 26-30, 2025/TBA, City Centre Rotana Doha Hotel, Doha, Qatar

Session 2: February 02-06, 2025/Boardroom 1, Elite Byblos Hotel Al Barsha, Sheikh Zayed Road, Dubai, UAE

Course Reference

HE1022

Course Duration/Credits

Five days/3.0 CEUs/30 PDHs

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

The purpose of this course is to provide an overview of process safety management (PSM) for facilities handling hazardous materials. The course shows the scope of PSM, and explains briefly the meaning of its elements and components.

This course is based on the approach developed by the Center for Chemical Process Safety (CCPS) of the American Institute of Chemical Engineers. This approach was selected after reviewing several of the alternatives currently available, and was chosen because it is comprehensive, well supported by reference materials, tools and an organizational infrastructure, and is based on a benchmark of leading or good industry practice rather than on a minimum standard.

Organizations already practising PSM but using a different approach (e.g.API RP750) do not necessarily need to switch to the approach given here. They should however be aware of any items here which may not be addressed under their present PSM scope (e.g. human factors). They should also be able to demonstrate that they have alternative measures in place for proper control of those items.

This course describes the application of these PSM principles to prevent accidents at facilities that manufacture, store, handle or use hazardous materials.

The process safety management system suggested by the Center for Chemical Process Safety consists of 12 elements. These elements are intended to work in conjunction with traditional health and safety programs and applicable federal/provincial legislation. Some elements or components of PSM may be less applicable to some facilities, depending on the nature and degree of potential hazards involved. However, each item should be considered before assuming that it is not applicable. Nonetheless, a complete framework of PSM elements is recommended for each facility.

Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on process safety management (PSM) based on the approach developed by the Center for Chemical Process Safety (CCPS)
- Establish accountability in order to demonstrate the status of process safety as well as set objectives for safe process operation and set specific process safety goals
- Acquire process knowledge, documentation and information necessary for the safe design, operation and maintenance of any facility
- Carryout project review and design procedures including hazard reviews, siting, plot plan, process design and review procedures and project management procedures and controls
- Implement process risk management and identify hazards
- Recognize process and equipment integrity and identify proper procedures for fabricating, inspecting and maintaining equipment for process safety
- Identify human factors that contributes to process accidents including process/equipment interface, administrative controls and human error assessment
- Gain proper training skills and obtain ongoing retraining to maintain these skills
- Investigate accidents and incidents (near misses) and implement proper procedures for doing investigation with emphasis on root cause analysis
- Recognize company standards, codes and regulations and identify process safety audits and implement corrective actions as well as enhance process safety knowledge

Exclusive Smart Training Kit - H-STK®

*Participants of this course will receive the exclusive "Haward Smart Training Kit" (**H-STK®**). The **H-STK®** consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

Who Should Attend

This course provides an overview of all significant aspects and considerations of process safety management for corporate executives, directors, process and operation managers, shift controllers and assistant shift controllers, maintenance and engineering managers, all section heads, HSE managers, supervisors, engineers and officers.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Course Fee

Doha	**US$ 6,000** per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.
Dubai	**US$ 5,500** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours.

Certificate Accreditations

Certificates are accredited by the following international accreditation organizations:-

- The International Accreditors for Continuing Education and Training (IACET - USA)

  Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

  Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

  Haward Technology Middle East will award **3.0 CEUs** (Continuing Education Units) or **30 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Mr. Andrew Ladwig is a **Senior Process & Mechanical Engineer** with over **25 years** of extensive experience within the **Oil & Gas**, **Refinery**, **Petrochemical & Power** industries. His expertise widely covers in the areas of **Ammonia Manufacturing & Process Troubleshooting**, **Distillation Towers**, **Crude Oil Distillation**, **Fundamentals of Distillation** for Engineers, **Distillation** Operation and Troubleshooting, **Advanced Distillation** Troubleshooting, **Distillation** Technology, Vacuum **Distillation**, **Ammonia Storage & Loading** Systems, **Ammonia Plant** Operation, Troubleshooting & Optimization, **Ammonia Recovery**, **Ammonia Plant Safety**, Hazard of **Ammonia Handling**, Storage & Shipping, **Operational Excellence** in **Ammonia Plants**, **Fertilizer Storage** Management (Ammonia & Urea), **Fertilizer Manufacturing** Process Technology, **Sulphur Recovery**, Phenol Recovery & Extraction, **Wax Sweating & Blending**, **Petrochemical & Fertilizer** Plants, **Nitrogen Fertilizer** Production, **Petroleum Industry Process** Engineering, **Refining Process & Petroleum Products**, **Refinery Planning & Economics**, Safe **Refinery Operations**, **Hydrotreating & Hydro-processing**, **Separators** in **Oil & Gas** Industry, **Gas Testing & Energy** Isolations, Gas Liquor Separation, **Industrial Liquid Mixing**, **Wax Bleachers**, **Extractors**, **Fractionation**, Operation & Control of **Distillation**, Process of **Crude ATM & Vacuum Distillation** Unit, **Water Purification**, **Water Transport** & Distribution, **Steam & Electricity**, **Flame Arrestors**, **Coal Processing**, **Environmental Emission Control**, R&D of **Wax Blending**, **Wax** Molding/Slabbing, **Industrial Drying**, Principles, Selection & Design, **Process Safety** Design, Certified **Process Plant** Operations, Control & Troubleshooting, **Operator** Responsibilities, **Storage Tanks Operations** & Measurements, **Tank Design**, Construction, Inspection & Maintenance, **Atmospheric Tanks**, **Process Plant** Troubleshooting & Engineering Problem Solving, **Process Plant Performance**, Efficiency & Optimization, Continuous Improvement & Benchmarking, **Process Troubleshooting** Techniques, Oil & Gas Operation/Introduction to **Surface Facilities**, **Pressure Vessel** Operation, **Plant & Equipment Integrity**, **Process Equipment** Performance & Troubleshooting, **Plant Startup & Shutdown**, **Startup & Shutdown** the Plant While Handling Abnormal Conditions, **Flare & Relief** System, **Process Gas Plant** Start-up, Commissioning & Problem Solving, **Process Liquid** and **Process Handling & Measuring** Equipment. Further, he is also well-versed in **Compressors & Turbines** Operation, Maintenance & Troubleshooting, **Heat Exchanger** Overhaul & Testing Techniques, Balancing of **Rotating Machinery** (**BRM**), **Pipe Stress** Analysis, **Valves & Actuators** Technology, Inspect & Maintain **Safeguarding Vent & Relief System**, Certified Inspectors for **Vehicle & Equipment**, Optimizing **Equipment Maintenance** & Replacement Decisions, Certified Maintenance Planner (**CMP**), Certified Planning and Scheduling Professional (**AACE-PSP**), **Material Cataloguing**, Specifications, Handling & Storage, **Steam Trap** Design, Operation, Maintenance & Troubleshooting, **Steam Trapping & Control**, **Column**, **Pump** Technology, **Pump** Selection & Installation, **Centrifugal Pumps** Troubleshooting, **Pumps** Design, Selection & Operation, **Pump & Exchangers**, Troubleshooting & Design, **Rotating Equipment** Operation & Troubleshooting, **Control & ESD** System, **Detailed Engineering Drawings**, Codes & Standards, **Budget** Preparation, Allocation & Cost Control, Root Cause Analysis (**RCA**), **Production Optimization**, Permit to Work (**PTW**), Project Engineering, **Data** Analysis, **Process Hazard** Analysis (**PHA**), **HAZOP** Study, Sampling & Analysis, **Training** Analysis, **Job Analysis** Techniques, Storage & Handling of **Toxic Chemicals & Hazardous Materials**, **Hazardous Material** Classification & Storage/Disposal, **Dangerous Goods**, Environmental Management System (**EMS**), Supply Chain, Purchasing, Procurement, **Logistics** Management & **Transport** & **Warehousing** & **Inventory**, **Risk** Monitoring Authorized Gas Tester (**AGT**), Confined Space Entry (**CSE**), Personal Protective Equipment (**PPE**), Fire & Gas, First Aid and Occupational Health & Safety.

During his career life, Mr. Ladwig has gained his practical experience through his various significant positions and dedication as the **Mechanical Engineer**, **Project Engineer**, **Reliability & Maintenance Engineer**, **Maintenance Support Engineer**, **Process Engineer**, **HSE Supervisor**, **Warehouse Manager**, **Quality Manager**, **Business Analyst**, **Senior Process Controller**, **Process Controller**, **Safety Officer**, **Mechanical Technician**, **Senior Lecturer** and **Senior Consultant/Trainer** for various companies such as the Sasol Ltd., Sasol Wax, Sasol Synfuels, just to name a few.

Mr. Ladwig has a **Bachelor's** degree in **Chemical Engineering** and a **Diploma** in **Mechanical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**) and has delivered various trainings, workshops, seminars, courses and conferences internationally.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0815 – 0930	***Accountability: Objectives & Goals*** *Continuity of Operations • Continuity of Systems • Continuity of Organization • Quality Process • Control of Exceptions • Alternative Methods • Management Accessibility • Communications • Company Expectations*
0930 – 0945	*Break*
0945 – 1045	***Process Knowledge & Documentation*** *Chemical & Occupational Health Hazards • Process Definition/Design Criteria • Process & Equipment Design • Protective Systems*
1045 – 1215	***Process Knowledge & Documentation (cont'd)*** *Normal & Upset Conditions (Operating Procedures) • Process Risk Management Decisions • Company Memory (Management of Information)*
1215 – 1230	*Break*
1230 – 1420	***Capital Project Review & Design Procedures*** *Appropriation Request Procedures • Hazard Reviews • Siting • Plot Plan • Process Design & Review Procedures • Project Management Procedures & Controls*
1420 – 1430	***Recap***
1430	*Lunch & End of Day One*

Day 2

0730 – 0930	***Process Risk Management*** *Hazard Identification • Risk Analysis of Operations • Reduction of Risk • Residual Risk Management • Process Management During Emergencies • Encouraging Client & Supplier Companies to Adopt Similar Risk Management Practices • Selection of Businesses with Acceptable Risk*
0930 – 0945	*Break*
0945 – 1125	***Management of Change*** *Change of Process Technology • Change of Facility • Organizational Changes That May Have an Impact on Process Safety • Variance Procedures • Permanent Changes • Temporary Changes*
1125 – 1215	***Process & Equipment Integrity*** *Reliability Engineering • Materials of Construction • Fabrication & Inspection Procedures • Installation Procedures • Preventative Maintenance*
1215 – 1230	*Break*
1230 – 1420	***Process & Equipment Integrity (cont'd)*** *Process, Hardware and Systems Inspection & Testing (Pre-Startup Safety Review) • Maintenance Procedures • Alarm & Instrument Management • Decommissioning & Demolition Procedures*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Two*

Day 3

0730 – 0930	***Human Factors*** *Operator – Process/Equipment Interface • Administrative Control versus Hardware Control*
0930 – 0945	*Break*
0945 – 1125	***Human Factors (cont'd)*** *Human Error Assessment*
1125 – 1215	***Training & Performance*** *Definition of Skills & Knowledge • Design of Operating & Maintenance Procedures • Initial Qualifications Assessment • Selection & Development of Training Programs*
1215 – 1230	*Break*
1230 – 1420	***Training & Performance (cont'd)*** *Measuring Performance & Effectiveness • Instructor Program • Records Management • Ongoing Performance & Refresher Training*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Three*

Day 4

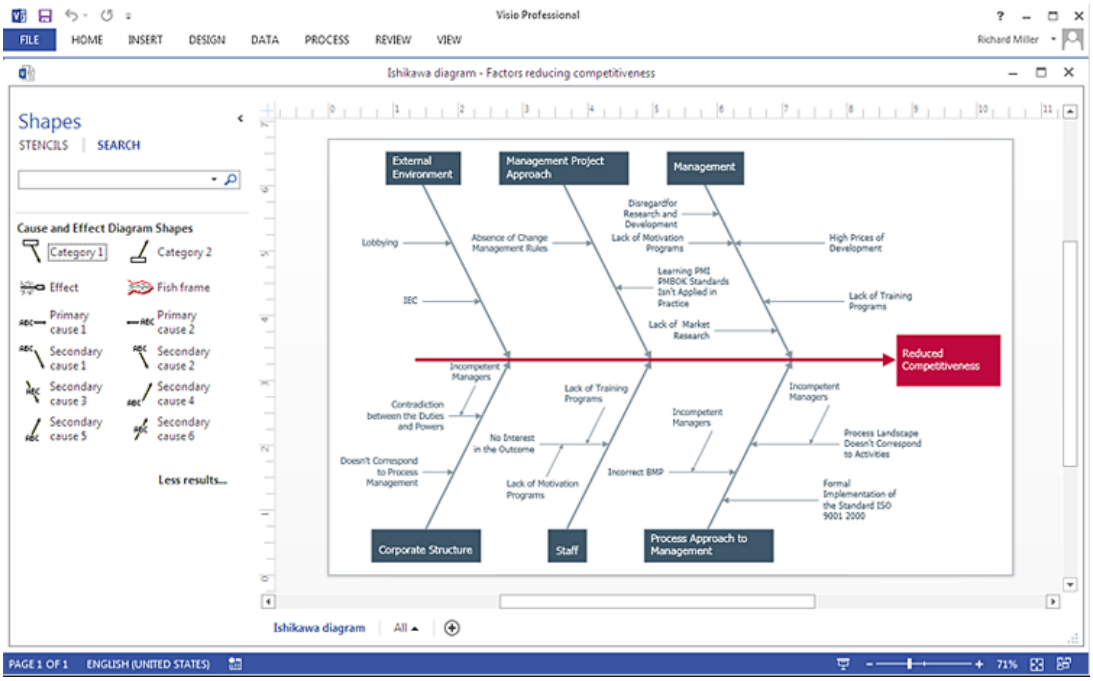
0730 – 0930	***Incident Investigation*** *Major Incidents • Third Party Participation • Follow-Up & Resolution • Communication*
0930 – 0945	*Break*
0945 – 1125	***Incident Investigation (cont'd)*** *Incident Recording, Reporting & Analysis • Near-Miss Reporting*
1125 – 1215	***Company Standards, Codes & Regulations*** *External Codes/Regulations*
1215 – 1230	*Break*
1230 – 1420	***Company Standards, Codes & Regulations (cont'd)*** *Internal Standards*
1420 – 1430	***Recap***
1430	*Lunch & End of Day Four*

Day 5

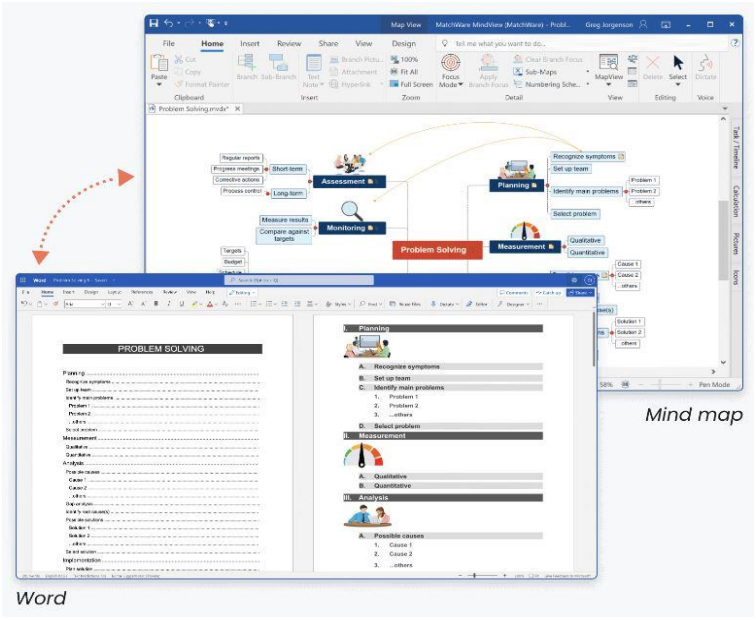
0730 – 0930	***Audits & Corrective Actions*** *Process Safety Management Systems Audits • Process Safety Audits*
0930 – 0945	*Break*
0945 – 1125	***Audits & Corrective Actions (cont'd)*** *Compliance Reviews • Internal/External Auditors • Corrective Actions*
1125 – 1215	***Enhancement of Process Safety Knowledge*** *Quality Control Programs & Process Safety • Professional and Trade Association Programs • CCPS Program*
1215 – 1230	*Break*
1230 - 1330	***Enhancement of Process Safety Knowledge (cont'd)*** *Research, Development, Documentation & Implementation • Improved Predictive System • Process Safety Resource Centre and Reference Library*
1330 - 1400	***Course Conclusion***
1400 – 1415	***POST-TEST***
1415 - 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

Simulators (Hands-on Practical Sessions)

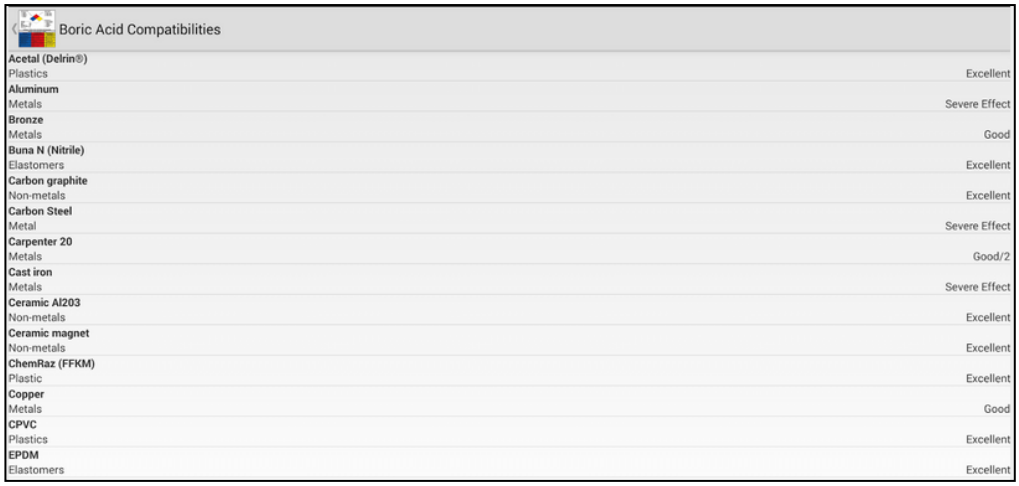
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using one of our state-of-the-art "Mindview", "Visio" Simulator"; "Chemical Compatibility 1.1 Simulator", "Chemical Safety Database Simulator", and "CAMEO Chemicals Suite Simulator".



Visio Software



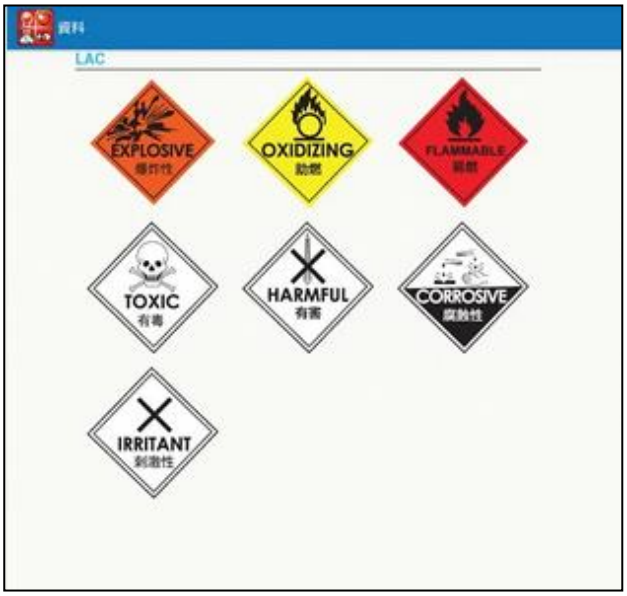
Mindview Software



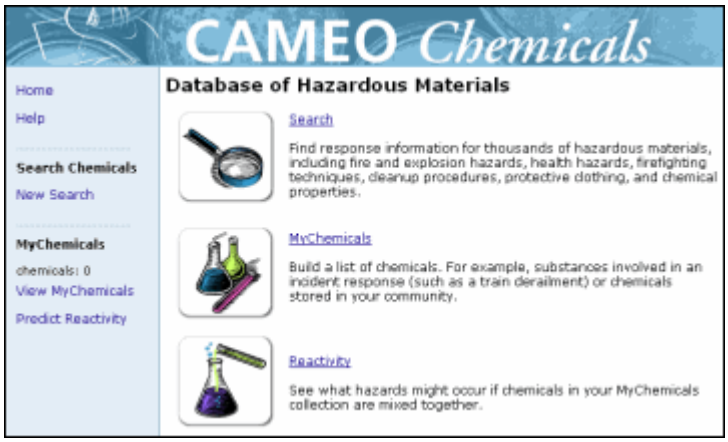
Boric Acid Compatibilities

Acetal (Delrin®)	
Plastics	Excellent
Aluminum	
Metals	Severe Effect
Bronze	
Metals	Good
Buna N (Nitrile)	
Elastomers	Excellent
Carbon graphite	
Non-metals	Excellent
Carbon Steel	
Metal	Severe Effect
Carpenter 20	
Metals	Good/2
Cast iron	
Metals	Severe Effect
Ceramic Al203	
Non-metals	Excellent
Ceramic magnet	
Non-metals	Excellent
ChemRaz (FFKM)	
Plastic	Excellent
Copper	
Metals	Good
CPVC	
Plastics	Excellent
EPDM	
Elastomers	Excellent

Chemical Compatibility 1.1 Simulator



Chemical Safety Database Simulator



CAMEO Chemicals Suite Simulator

Course Coordinator

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