

Title of project/experiment/activity Use of ISO PRO NANO Glovebox			
Location of activity Cambridge Graphene Centre : Chemistry Lab		Start and end dates 08/09/2015 - continuous	
Brief description (or attach procedure/protocol) The glovebox is used for personal protection when working with nanoparticles. The filter systems of the box protects the inside from contamination of the environment and the environment from the materials processed in the glovebox. The Glovebox is applied to process materials with Nanoparticles The equipment is located in Cambridge Graphene Centre Chemistry Lab. It is expected to be used daily for several hours. The IsoPro Nano glove box is a commercially made system for handling nanomaterials and will be used in accordance with the manufacturer's instructions.			
Hazard	Effect	Control measures	Residual risk
Mechanical	Risk of squeezing, shearing and cutting, catching and winding, stretching of extremities! Free moving parts may cause injury. The system may not be opened during operation or power failures.	Keep hands and arms out of the hazard area. Do not remove safety covers, panels, windows or doors (except those intended for service during operation). If any safety facility fails or is not present: shut down the system and inform the safety responsibilities.	Low risk
Electrical	Hazardous electrical voltage! Risk of an electric shock, involuntary muscle reaction, muscle paralysis, burnt tissues and organs or	The electrical cabinet is only allowed to be opened by an electrician or trained maintenance personnel. Prior to opening the switching cabinet, the main switch must be turned to the off-position. There are still live parts and charged capacitors when the main switch is off. Never bridge fuses. Never interchange current bearing wires. All works on the electrics is allowed only to be performed by an electrician. This includes the connection to the main power supply. Prior to working on the electrics, disconnect from the power supply. Never operate the system with the electrical cabinet	Low risk

<p>Solvents, chemical and gases</p>	<p>death. Risk of damage or injury. Materials used may be flammable, explosive and/or toxic. Released chemicals may react with each other, leading to unwanted and/or unknown substances, which may cause additional risks. Solvents may destroy gaskets of the Glovebox or other system components (e.g. freezer gaskets) or the rubber material of the gloves. Solvent vapour is also absorbed by the reactor material and may reduce capacity for water vapour.</p>	<p>door open. Adhere to the following guidelines: Proper handling of chemicals, corrosives, solvents and gases is the user's responsibility. Ensure that all relevant "Control of Substances", "Hazardous to Health" guidelines such as European directive 98/24/EC (risk to chemical agents), COSHH (UK) or any other applicable rules are followed. Mark all containers and supply lines of chemicals (i.e. containers of media and waste) with appropriate labels and warning signs. Ensure proper ventilation and exhaustion of vapours. Do not inhale gases. Keep away from ignition sources. Do not smoke. In case of working with solvents, chemical and gases adhere to the following safety measures: Wear personal protective equipment (PPE): proper protective safety mask, protective gloves and safety glasses Observe relevant safety regulations as well as MSDS and additional advice, provided by the supplier.</p>	<p>Low risk</p>
<p>Electrical risk while fire fighting</p>	<p>Hazardous electrical voltage! Risk of electric shock when extinguishing fires on the system if it is still live and if conductive extinguishing</p>	<p>Match the fire extinguishing medium to the hazard material and against the installation room condition (ABC powder / CO2 or water extinguisher) Turn the main switch to off-position. In case of fire within the working room immediately follow the SOP for fire emergency of the Operating Company.</p>	<p>Low risk</p>

	media are used.		
Damage of the system	Risk of injury and damage!	<p>The system is considered unsafe for operation if:</p> <ul style="list-style-type: none"> there is any visible damage it fails to perform according to specification it has been subject to prolonged storage under unfavourable conditions it has been subjected to severe transport stress it failed to the proceeded leakage test <p>If the system meets any or all of the above:</p> <ul style="list-style-type: none"> take it out of service secure it against any unauthorized or unintentional operation contact the ME CALAB /MB R AUN Service 	Low risk

Personal Protective Equipment required [*eye/face protection, respiratory protection, gloves, lab coat etc*]

Lab coat, gloves (purple nitrile) and eye protection (safety specs) required in the lab at all times

Emergency Instructions & First Aid

If the system must be shut down for emergency reasons:
 Turn off main switch and disconnect the system from the powerline
 Close any gas pipes to stop gas supply
 note the material safety data sheet (for information how to act in an emergency)
 Provide first aid
 Call ambulance service and emergency medical
 Call supervisor and security officer
 Clear and keep clear emergency routes for emergency services

Spillage:

Solvent spillage or water-based dispersion spillages can be dealt by wiping with wipes. The wipes disposed into waste bins or should be left to dry (in the case of solvent spillage) in the solvent fume cupboard prior to disposal into waste bins.

Fire:

In case of fire, the fire alarm should be sounded and fire service called. If safe to do so, the fire may be extinguished using an extinguisher containing carbon dioxide, located in the corridor outside the laboratory.

First aid:

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance.
 If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
 In case of skin contact: Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
 In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Any special monitoring required [*e.g. hearing test, vibration monitoring, health surveillance*]





No

<p>Further control measures required? If yes, list with actions.</p> <p>Waste Disposal Procedures: Aqueous waste should be disposed in a container separate from solvent waste. Solvents will be disposed of in suitable chlorinated (e.g. DCB, chloroform), or non-chlorinated (all others) waste containers.</p>
<p>Biological/Laser/Radiation Approval [requires relevant Specialist Safety Officer signature and date]</p> <p>N/A</p>
<p>Out of hours/Lone working</p> <p>The IsoPro Glovebox can only be used during working hours.</p>

Department of Engineering – Risk Assessment

Ref No. B458

Signature to confirm that this is a suitable and sufficient assessment of risk and that stated control measures are in place. This risk assessment should be reviewed if additional risks not covered in this assessment are identified or if there is any reason to indicate that the control measures are insufficient.

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