COSHH FORM

Always follow good laboratory practice, full guidance at http://www.docs.csg.ed.ac.uk/Safety/policy/p5cl/p5cl2.pdf

Each section has corresponding in depth guidance (section 2) for completion – please ensure you follow this guidance when completing this assessment (http://www.docs.csg.ed.ac.uk/Safety/ra/COSHH_notes.pdf).

This form can be used to evaluate the hazards of a single substance, group of related substances or a process/procedure as well as any proprietary purchased materials.

School/Management Unit	School of Engineering	Assess. No.	STR0049
Title of Activity	**Mixing, handling and curing epoxy resin for FRP bonding or FRP wet lay up.**		
Location(s) of Work	Fire Lab 2 / WRB Construction Materials Lab.		

Outline of task/method:

This COSHH assessment addresses hazards relating to the use of two-component (resin + hardener) epoxy adhesive systems. It has been prepared for the following epoxies:

- Easycomposites EL2 Epoxy Laminating Resin + AT30 Hardener (Slow or Fast)
- Fyfe Tyfo-S Component A (Resin) + Component B (Hardener)
- Fyfe Tyfo-ST Component A (Resin) + Component B (Hardener)
- Sikadur 330 Laminating Compound Part A (Resin) + Part B (Hardener)
- Gurit SP-106 Multi Purpose Epoxy System Resin + Hardener
- TML P2 and NP50 epoxy strain gauge adhesives Drug A (Resin) + Drug B (Hardener)

For other epoxy resins, the appropriate MSDS must be consulted, and either this COSHH will need to be reviewed and amended or a new COSHH prepared.

This COSHH assessment considers general use of the epoxy for wet lay-up of FRP composites, or for bonding pre-formed FRP components. Any other use of the epoxy will require separate assessment.

This form must be accompanied by a Safe System of Work for the activity being carried out, and should be read in conjunction with the appropriate MSDS for the epoxy being used.

A. Hazards including any substances produced during the procedure

Risk evaluation should be based on hazard classification and hazard statements – if control methods stated above reduce the risk to low at this point, the risk assessment is complete. If any medium to high hazards remain, please continue to complete the rest of the form.

Hazard(s) – state name of substance(s) and classify hazard (see guidance notes)	**Present Risk Evaluation** Low/Med /High	**Control Measures** (i.e., alternative work methods / mechanical aids / engineering controls, etc.)	**Risk Evaluation after control** Low/Med /High
Epoxy Resin. Eye Irritation. R36 – Irritating to Eyes. If in contact with eyes, resin causes irritation that may last for over 24 hours. Skin Inflammation. R38 – Irritating to Skin. Resin causes inflammation of skin if not removed immediately. Skin Sensitisation. R43 – May cause sensitisation by skin contact.	Med	Follow good working, storage and handling practices. Refer to specific hazards below.	Med
Epoxy Hardener. Corrosive Highly corrosive and causes serious burning, with rapid destruction of entire thickness of skin tissue. Harmful. R20/21/22 – harmful in contact with skin and if swallowed. Poses a serious health hazard if inhaled, ingested, or brought into contact with skin. R62 – Possible risk of impaired fertility. Severe Burns to Skin. R35 – Causes severe burns. Skin Sensitisation. R43 – May cause sensitisation by skin contact.	High	Follow good working, storage and handling practices. Refer to specific hazards below.	Med
Epoxy Resin or Hardener. Fumes. Prolonged exposure or inadequate ventilation to fumes leads may cause faintness.	Med	Ensure adequate ventilation, appropriate to the quantity of resin being used. Use extraction, hoods, or fume cabinets. Avoid contact with and inhalation of vapour and dusts.	Med

Epoxy Resin or Hardener Environmental Damage. R51/53 – Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.	Med	Never allow resin to enter watercourses or drains; do not spill on open ground or on vegetation. Follow correct waste disposal procedures. Is resin or hardener enters watercourses, drainage, or soil and vegetation, contact relevant authorities.	Low
Epoxy Resin or Hardener. Combustion. Burning epoxy produces irritating, toxic fumes.	Med	Only mix small quantities of epoxy, because significant heat is generated during curing and the heat generated by mixing large quantities can lead to ignition. Fire or heated tests involving epoxy required separate risk assessment to determine control requirements.	Low
Epoxy Resin or Hardener. Accidental Release. Leading to fumes, skin and eye contact, environmental damage etc.	Med	Follow good storage and working practices to avoid accidental release. Keep containers closed until they are needed; re-seal as soon as they have been used. Do not place containers where they are prone to being spilt. In event of accidental release, ventilate well. Collect resin as soon as possible (use mask, gloves, protective clothing), and prevent it from entering soil, watercourses or drains. Limit leakage with sand or earth. See waste disposal below.	Low
Epoxy Resin or Hardener. Unintentional reaction with other materials. *Resin* reacts with amines, strong bases, acids and strong oxidants. *Hardener* reacts with acids, isocyanates, oxidants, as well as epoxy, chlorinated and carbonylic compounds.	Low	Store in sealed containers away from other chemicals. Only the resin and hardener should be present during any work.	Low
Epoxy Resin or Hardener. Decomposition of resin or hardener due to incorrect storage conditions.	Low	Store above 15degC, within Fire Lab 2 or the Construction Materials Lab. (Avoid storing in Fire Lab store area in winter). Store in a dray place with containers tightly closed. The hardener is moisture sensitive.	Low

Epoxy Resin or Hardener. Ingestion.	Low	No eating or drinking while working; wash hands thoroughly after work.	Low
Hardened Epoxy. Inhalation or Ingestion of Dust.	Med	Use extraction when machining hardened epoxy.	Low
Injury from Packaging. Physical injury due to falling packages.	Med	Keep packages properly stored on shelves.	Low
Stored Epoxy. Injuries resulting from unmarked and part-used containers.	Med	Make sure all stored epoxy is clearly labelled and placed on appropriate shelves; ensure that lab users can easily find this COSHH form. Stocks of epoxy should be checked periodically and disposed of rather than allowing them to accumulate.	Low
Epoxy Resin or Hardener. Risk to individuals not involved with operations.	Med	Mixing should take place away from other people. Spectators not allowed unless they are briefed and wearing necessary PPE. If mixing takes place in the lab, ensure other lab users know about work and risks.	Low
Spread of epoxy resin or hardener during work. Resulting in eye, skin exposure etc.	Med	Good working practices to avoid spread of epoxy include using disposable polythene sheet to protect worksurfaces; collecting together all tools and containers before work; ensuring there is sufficient space for work and that area is well laid out; providing containers to put waste in; ensuring a ready supply of cleaning materials (e.g. paper towels) and deposable gloves. Dispose of all waste and worksurface protection promptly, clean tools etc promptly, and clearly label on uncured samples that are left where others might touch them.	Low

B. Exposure route(s) by which harm may occur

Skin Contact	Skin Absorption	Eye Contact	Inhalation	Ingestion	Injection via sharps
Yes	No	Yes	Yes	No, except in accidental cases.	No

C. Engineering Control Measures (Fume cupboards/LEV etc.)

State any engineering controls required for this task/method;

Use laboratory extraction or ventilation systems appropriate to the amount of epoxy being used and the exposure time. (Fume hoods or fume cabinets in Fire Lab 2; extraction system in WRB Construction Materials Lab).

D. Personal Protective Equipment (PPE)

State any PPE required for this task/method. Include which type and when they are to be worn.

The following PPE must be worn at all times when handling epoxy resin:

- Safety glasses with side shields or goggles.
- Gloves: Chemical resistant gloves, which must be impermeable front and back. If epoxy enters the inside of gloves, dispose of the gloves immediately, wash hands, and wear new gloves.
- Safety boots: closed boots. Boots should have toe and sole protection due to wet layup operations. Take care that wet epoxy does not enter boots.
- Clothing: closed long-sleeved clothing (lab coat / trousers or overalls) that completely covers skin. Take care that wrists are not exposed at junction between gloves and sleeves.
- Barrier cream to protect skin from wet epoxy.

E. Health Monitoring

	Yes	No
Is biological monitoring required to ensure that the control of exposure to the hazardous substance(s) is adequate?		X
Is health surveillance required for the protection of the health of employees?		X

If yes for health monitoring, contact the Occupational Health Unit for an appointment (occupational.health@ed.ac.uk, 50 8190)

F. Training

State any health and safety training required for this task/method;

Training by tech staff or lab manager, followed up by the Safe System of Work.

All those involved in handling and mixing epoxy products must either read, understand, and sign the Safe System of Work, or be closely supervised by someone familiar with the SSW.

G. Supervision

State what supervision (if any) is required for persons undertaking this task/method:

Tech staff will provide initial supervision to ensure that users are aware of hazards and their significance.

H. Implications for persons not involved in the work activity

Persons identified may require to be informed, in part or in full, of the information contained in the Safe System of Work.

Any samples left to cure must be clearly labelled, and not left so that they are in the way of other lab users.

Dispose of all waste epoxy, spilt materials, including worksurface protection sheets etc. as soon as possible to avoid the risk of it spreading.

Ensure all containers are properly sealed, clearly marked, and properly stored. Ensure safety paperwork is readily available for other lab users. Periodically check stocks of epoxy and dispose of stock that is not required or has expired.

I. Emergency procedures

State all emergency procedures including contact names and numbers;

- **Seek First Aider.** First aiders are displayed on laboratory notice boards.
- First aid kits are in Fire Lab 2 or in the WRB Corridor.
- There is an eye wash shower in Fire Lab 2, and sterile eye wash pouches in the structures lab or WRB corridor.
- A body shower is located in Fire Lab 2, or opposite the WRB Construction Materials Lab.

After contact with eyes:
Hardener: Wash immediately and thoroughly with water for at least 15 minutes, keeping eyelids raised and holding them away from eyeball. Protect eyes with sterile gauze. Seek medical advice. Do not yse eyewash or ointment of any kind before examination by ophthalmologist.

Resin: Wash immediately and thoroughly with water for at least 15 minutes, keeping eyelids

raised and holding them away from eyeball. Seek medical advice if irritation persists.

After skin contact:
Resin and Hardener: Immediately take off all contaminated clothing. Remove the product with a cloth or absorbent paper. Wash with plenty of water and soap. Do not use solvents – they increase penetration of the material.

After inhalation:
Hardener: Ventilate the premises. Remove patient to a well-ventilated area and rest. **Seek medical attention.**
Resin: Ventilate the premises. Remove patient to a well-ventilated area and rest. Seek medical attention if the patient remains unwell.

After significant accidental ingestion:
Hardener: Immediately seek medical advice (call ambulance). Do not under any circumstances induce vomiting.
Resin: Wash out mouth with water. Obtain medical attention. The induction of vomiting and the administration of oral drugs must be carried out only upon medical advice.

Fire Fighting:
Resin and Hardener: produces irritating, toxic, obnoxious fumes. Use CO_2 or foam extinguisher, or sand. Only use water extinguishers with caution. Respiratory equipment required depending upon situation and ventilation available.

J. Waste disposal

State waste disposal routes for all hazardous substances in this task/method;

- Hardened epoxy and FRP is not dangerous and should be disposed of in the courtyard skip. Small quantities of epoxy resin and hardener should be disposed of by mixing and allowed to cure.
- Allow epoxy in mixing buckets etc to harden before disposal in skip. It is often possible to “pop” the hardened epoxy out of a plastic bucket so that the bucket can be used again.
- Clean tools by wiping, followed by solvent wipe.
- Wet epoxy resin and hardener must not be allowed to enter the sewage system.
- Large quantities of resin or hardener must be disposed of via the university’s waste disposal route; contact the waste manager number below.
- Hardened epoxy dust and debris can be vacuumed or swept up as normal.

If in doubt contact the University Waste and Environmental Manager Ext. 514287.

	Yes	No
Are you satisfied that the control measures outlined above are adequate to control the risks to health from the hazardous substances used in the work activity described to the lowest level reasonably practicable? **If no, work cannot continue until safe to do so**	X	

K. Accreditation and verification of COSHH risk assessment

When this assessment is complete it should be signed and dated by the assessor and then checked and signed by the person responsible for operations in that section of the School/Unit where the work is being carried out. You must ensure that the person undertaking the task is competent to do so and has received sufficient information, instruction and training and has seen and signed the Safe System of Work.

Assessed by:	Zaid Al-Azzawi	Checked by:	Tim Stratford
Signature:		Signature:	
Date:		Date:	

L. Review of Assessment

This assessment should be reviewed at regular intervals and immediately if there is reason to suspect that it is no longer valid (for example after any accidents or incidents) or if there is a significant change in the work to which it relates.

When the assessment is reviewed, add below the signature of the assessor and the person responsible for work in that area of the School/Unit. If the activity has materially changed in any way then a new assessment should be undertaken and a new assessment form completed. Any original signatories covered by the modified assessment should sign again.

Review Required 12 August 2014

Assessed by:		Checked by:	
Signature:		Signature:	
Date:		Date:	

Annexe A

Annexe A can be used instead of Sections A-J above. It covers the same areas but in a table format, (http://www.docs.csg.ed.ac.uk/Safety/ra/COSHH_Annexe_A.doc).

Safe System of Work

Now formulate a Safe System of Work (form SSW, http://www.docs.csg.ed.ac.uk/Safety/ra/SSW_form.pdf or http://www.docs.csg.ed.ac.uk/Safety/ra/SSW_form.doc) (also known as Standard Operating Procedure or SoP) and ensure all laboratory users countersign to verify they understand it.