DEPARTMENT OF **EDUCATION AND TRAINING**

Curriculum activity risk assessment

Thermoforming Plastics

clever • skilled • creative

Activity scope

This document relates to working with Thermoforming Plastics as a curriculum activity.

'Thermoforming plastics' refers to a group of plastics that soften readily with the application of heat and will harden again once the temperature is reduced to normal room temperature. This process can be repeated indefinitely, provided the temperature is kept below the level at which the material will burn or degrade. When mixed with a catalyst, thermoforming plastics will set in their new shape permanently.

Teachers/leaders:		
Activity description:		
Start date:	Finish date:	No of students (approx.):
Class groups:		Supervision ratio (approx.):

Risk level

The actual risk level will vary according to the specific circumstances of the activity and these **must** be considered when assessing the inherent risk level and planning the activity. As a starting point, ask the following questions:

- *Which students will be involved?*
- *What will the students be doing?*
- *What will the students be using?*
- *Where will the students be?*
- *Who will be leading the activity?*

Inherent risk level			Action required / approval
☐	**Medium**	Basic processes are adopted and include equipment such as a buffing machine and a strip heater. Processes include marking, cutting, filing, drilling, polishing and solvent welding (bonding).	☑ Record controls in your planning documents and/or complete this *Curriculum Activity Risk Assessment*. ☑ Consider obtaining parental permission.
☐	**High**	Equipment used may include an oven, vacuum-forming machine, blow forming table, hot-air welding gun and injection moulding. Thermoforming processes present exposure to heat and sharp materials.	☑ A *Curriculum Activity Risk Assessment* must be completed. ☑ Principal or delegated Deputy Principal or Head of Program (i.e. HOD, HOSES, HOC) to review and approve risk assessment. ☑ Obtaining parental permission is recommended. ☑ Once approved, activity details are to be entered into the *School Curriculum Activity Register*.

Listed below are the minimum recommendations for this type of activity. For any items ticked 'No', provide further information regarding the additional or alternate controls to be implemented for the safe conduct of the activity.

Minimum supervision

Adequate adult supervision is to be provided. In determining what is adequate, consider the number of students, their individual needs, and the nature of the activity. If an adult other than a registered teacher is engaged for instruction, a teacher should be present to take overall responsibility. Blue Card requirements **must** be adhered to.

☐ Registered teacher with minimum qualifications as outlined below

OR

☐ An adult with minimum qualifications as outlined below, in the presence of a registered teacher

Further information:

Minimum qualifications

The qualifications listed in this section are minimums for each type of situation. Leaders are encouraged to seek training to raise their qualification level above the minimum listed.

☐ Current first aid qualifications including Cardio Pulmonary Resuscitation (CPR) or ready access to first aid facilities, including qualified personnel.

☐ Blue Card requirements met.

Medium — Basic processes are adopted and include equipment such as a buffing machine and a strip heater. Processes include marking, cutting, filing, drilling, polishing and solvent welding (bonding).

For a registered teacher:

☐ competence/experience (previous practical involvement) in working with thermoplastics

A teacher could demonstrate their competency through their:

☐ knowledge of the activity and the associated hazards and risks

☐ experience (i.e. previous involvement) in undertaking the activity

☐ demonstrated ability and/or expertise to undertake the activity

☐ possession of qualifications related to the activity.

OR

For a leader other than a registered teacher:

☐ competence (demonstrated ability) in working with thermoplastics

Minimum qualifications

The qualifications listed in this section are minimums for each type of situation. Leaders are encouraged to seek training to raise their qualification level above the minimum listed.

High — Equipment used may include an oven, vacuum-forming machine, blow forming table, hot-air welding gun and injection moulding. Thermoforming processes present exposure to heat and sharp materials.

For a registered teacher with qualifications in Industrial Technology Design (ITD):

☐ competence (demonstrated ability) in working with thermoplastics

A teacher could demonstrate their competency through their:

☐ knowledge of the activity and the associated hazards and risks

☐ experience (i.e. previous involvement) in undertaking the activity

☐ demonstrated ability and/or expertise to undertake the activity

☐ possession of qualifications related to the activity.

OR

For a leader other than a registered teacher:

☐ competence (demonstrated ability) in working with thermoplastics in a trade situation.

Further information:

Minimum equipment/facilities *If 'No' is ticked, provide further information.*	Yes	No
First aid kit suitable for activity	☐	☐
Maintenance and servicing of equipment to manufacturer's specifications; Access to the equipment maintenance registers	☐	☐
Communication system: ☐ phone-line at location ☐ mobile phone ☐ walkie talkies/UHF radio ☐ student/adult messenger Other:		
Appropriate and maintained fire safety equipment (extinguisher, blanket, evacuation plan)	☐	☐
Drinking water (students should not share drinking containers)	☐	☐
Safety glasses and appropriate fully-enclosed footwear that protects against falling sharp tools, equipment or project materials	☐	☐
Standard operating procedures clear and present for ALL equipment used	☐	☐
Fixed residual current device on all equipment; For further information refer to: quick reference guide for specified electrical equipment.	☐	☐

Minimum equipment/facilities *If 'No' is ticked, provide further information.*	Yes	No
Adequate lighting and ventilation	☐	☐
Suitable non-slip floor surface	☐	☐
Material safety data sheets for all chemicals stored in the workshop	☐	☐
Clearly marked work areas delineated with yellow paint or similar material	☐	☐
Suitable and sufficient waste bins	☐	☐
Emergency stop buttons on equipment where required	☐	☐
Properly installed guards and safety devices on all equipment where necessary	☐	☐
Further information:		

Hazards and suggested control measures

All persons engaging in this activity should:

- identify the hazards, including any additional hazards not mentioned here
- assess their significance
- manage the potential risks.

Listed below are indicative hazards/risks and suggested control measures. They are by no means exhaustive lists. After checking these, add details of any other identified hazards/risks and additional controls you intend to implement.

Hazards/risks	Control measures	Yes	No	Implementation plan / Additional controls
Dust and fumes • Plastic fumes and dust	• Dust from certain plastics may be harmful if inhaled and may cause irritation to the skin and eyes. Sanding machines should be fitted with dust-extraction equipment where it is considered appropriate. • Toxic fumes given off by heated and superheated plastics, such as PVC, are a health hazard and steps should be taken to prevent them from being inhaled. • Ensure that there is adequate ventilation of the area used for this process. • Plastic solvents are injurious if inhaled and steps should be taken to minimise this possibility.	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	
Environmental conditions • Weather	• Complete the Curriculum Activity Risk Assessment: Managing a Practical ITD Workspace.	☐	☐	

Hazards/risks	Control measures	Yes	No	Implementation plan / Additional controls
• Surfaces • Surrounds • Workshop Environment	• Monitor temperature levels in workshop. • Keep workspaces and floors clean and clear of debris. • Ensure that there is sufficient free space in the vicinity of the oven or heating devices to allow easy transportation of hot materials. • Have appropriate and sufficient waste containers. • Ensure that adequate ventilation is available during sanding, painting and gluing, especially when materials are used that release fumes during use, such as contact adhesives, paints, solvents and glues from the oven to the forming jig.	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
Heat • Friction • Elements	• Handle materials carefully during and after the use of equipment. • Remain aware of your surroundings. • Ensure that caution is used when hot equipment (e.g. ovens, strip heaters and welding guns) is being used for bending plastic. • Ensure that all combustible flammable material is kept clear of all heating devices. • Ensure that suitable lifting or transferring devices or gloves are available for the handling of materials in and out of ovens etc. • Ensure that appropriate personal protective clothing is worn by anyone handling heated and superheated plastics and equipment. • Ensure that the working area has ready access to running water in case of accidental burns.	☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐	
Manual handling • Lifting Equipment and materials	• Undertake a risk management process in order to prevent or minimise the risk of injuries caused by manual tasks.	☐	☐	

Hazards/risks	Control measures	Yes	No	Implementation plan / Additional controls
Noise • Continuous, repetitive noise • One-off noise exposure	• Provide personal hearing protection and training for relevant staff in the correct use and storage of the hearing protection. • Minimise the number of students working at one time. • Redesign tasks so that staff and students are not exposed to loud noise over extended periods. • Refer to Health and Safety; Noise for further information. • Repair and maintain equipment and machinery to reduce their noise levels.	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
Students • Student numbers • Special needs • High-risk behaviours • Medical conditions	• Obtain parental permission, including relevant medical information. • When students with medical conditions are involved, ensure that relevant medical/emergency plans/ medications are available (insulin, Ventolin, Epipen, etc.) • Refer to Individual education plan/Educational adjustment plan/Behaviour management plan and other student documents. • Where necessary, obtain advice from relevant advisory visiting teachers or specialist teachers. • Ensure there is adequate adult supervision.	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
Tools, plant or equipment	• Ensure that loose jewellery and clothing is secured or removed. • Ensure that long hair is tied back. • Clearly designate work areas. • Monitor use of tools and equipment. • Check equipment for damage before lesson.	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	

Hazards/risks	Control measures	Yes	No	Implementation plan / Additional controls
	• Regularly maintain and sharpen equipment where appropriate. Blunt-edged tools are more dangerous than properly maintained tools because of the extra pressure required to use them. Tools should be properly maintained.	☐	☐	
	• Refer to and follow standard operating procedures for all equipment.	☐	☐	
	• Avoid the use of extension leads where possible.	☐	☐	
	• Securely fix any jobs to a bench, table, floor or other suitable surface.	☐	☐	
	• Ensure that all guards are correctly adjusted and securely fixed before beginning operations.	☐	☐	
	• Ensure that all solvents are stored in a well-ventilated cupboard away from direct access by all students.	☐	☐	
	• Ensure that the buffing mop is in sound condition, is suited to the job and is properly and firmly secured to the spindle.	☐	☐	

Additional control measures

These would relate to the specific student needs, location and conditions in which you are conducting your activity.

Hazards/risks	Control measures

Submitted by:	**Date:**
List the names of those who were involved in the preparation of this risk assessment.	

Approval	
☐	Approved as submitted:
☐	Approved with the following condition(s):
☐	Not approved for the following reason(s):

By:	Designation:
Signed:	Date:
Once approved, activity details should be entered into the *School Curriculum Activity Register* by administrative staff.	Reference no.

Monitor and review *To be completed during and/or after the activity and/or at the completion of the series of activities.*	Yes	No
Are the control measures still effective?	☐	☐
Have there been any changes?	☐	☐
Are further actions required?	☐	☐
Details:		

Important links

- HLS-PR-003: First Aid
  http://education.qld.gov.au/strategic/eppr/health/hlspr003/
- HLS-PR-004: Infection Control and Management of Prescribed Contagious Conditions
  http://education.qld.gov.au/strategic/eppr/health/hlspr004/
- Infection Control Guideline:
  http://education.qld.gov.au/health/pdfs/healthsafety/infection_control_guideline.pdf
- HLS-PR-005: Health and Safety Incident Recording and Notification
  http://education.qld.gov.au/strategic/eppr/health/hlspr005/
- HRM-PR-010: Working with Children Check – Blue Cards
  http://education.qld.gov.au/strategic/eppr/hr/hrmpr010/
- HLS-PR-006: Managing Occupational Risks with Chemicals
  http://education.qld.gov.au/strategic/eppr/health/hlspr006/hs16.pdf
- Standard Operating Procedures for Education Queensland sites
  http://education.qld.gov.au/health/safety/hazards/equip-resources.html#sop
- Hearing Protection Fact Sheet
  http://education.qld.gov.au/health/pdfs/healthsafety/hearing-protection-factsheet.pdf
- 2004 Noise Code of Practice
  http://www.deir.qld.gov.au/workplace/resources/pdfs/noise_code2004.pdf
- Managing a Practical ITD Workspace
  http://education.qld.gov.au/strategic/eppr/health/hlspr012/resources/pracitdworkspace.pdf

Further information

For further information on incorporating risk management strategies into curriculum activity planning refer to HLS-PR-012 Managing Risks in Curriculum Activities and the associated list of Curriculum Activity Risk Assessment Guidelines. (See: http://education.qld.gov.au/strategic/eppr/health/hlspr012/index1.html)

For further support with risk management training and advice, contact trained staff in schools such as Workplace Health and Safety Officers (WHSOs) and Workplace Health and Safety Representatives (WHSRs), and regional staff such as Senior Health and Safety Consultants.

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