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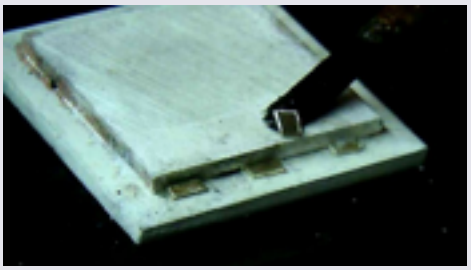
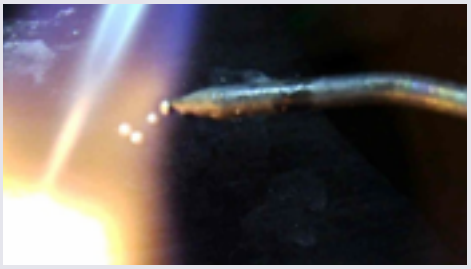
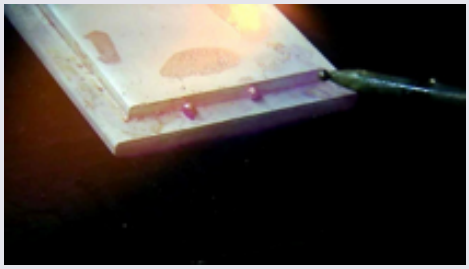
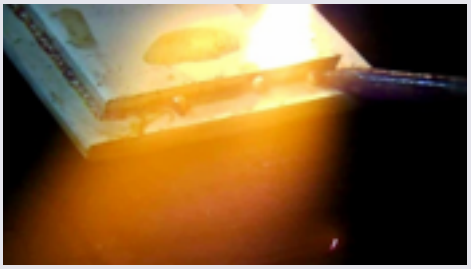
Transferring global best practice in Fine Jewellery Making

NCFE
ENDORSED PROGRAMME

Hints and tips
to embed skills excellence

Skill: Fine Jewellery Making
Video chapter reference: Advanced soldering - ways to apply solder more quickly

Task	Purpose	Practice	Evaluate
Practice two different ways to apply solder and compare to see how applying solder with a probe can be faster	◦ the object of this task is to see if soldering can be made faster by balling the solder and then applying it with a soldering probe ◦ it will be compared to more traditional methods ◦ it requires more skill but can be a more time efficient because the solder can be placed on the job while still being heated by the torch ◦ this method also aims to develop hand skills and the use of both hands when soldering.	◦ set task to solder two different 15mm square pieces of sheet (1mm thick) onto another piece of sheet (eg 20mm square of the same thickness) applying solder in two different ways ◦ first, applying solder in traditional way – apply flux (such as borax), cut small pallions of silver solder then place on area to be joined using small paint brush or tweezers and solder using a torch ◦ second, cut small pallions of solder and paint with flux then apply heat to ball up into approx. 0.5-1.0mm spheres. Apply flux on two pieces to be joined and heat gently until borax has stopped bubbling. Place spheres of solder to area to be joined using soldering probe by heating end of probe and picking up solder and placing on join. Remove probe and heat further until solder runs ◦ observe differences in time it takes to apply solder using both techniques.	◦ soldering skills and control will be enhanced ◦ you are able to observe how speed can be increased using this balling method ◦ this method also encourages the use of both hands to solder simultaneously holding the torch in one hand and applying solder with the other.
	Traditional placement of solder with brush is a simpler technique but can take longer.	Solder pallions placed with brush and then soldered. 	Most learners will use one hand to place solder and then same hand to hold torch using this technique.

	Alternative 'balled' solder technique.	Solder 'balled', by heating with torch. 	This technique requires a two handed approach, therefore discuss how this might be approached.
	One hand holds torch and the other the solder probe as solder is lifted on to job while applying gentle heat to make solder adhere to end of probe – develops fine motor skills.	Use probe to pick up balled solder while heating gently with torch. 	Discuss how this approach saves time.
	Solder placed with probe.	Solder placed with probe while heating job. 	Placement improves dexterity as it requires two handed approach. What can help? – eg support probe hand on bench or peg.
		Probe then removed and more heat is applied to run solder. 	◦ evaluate challenges of learning this approach, what is required to make it successful eg needs fine control of heat source ◦ when would be the best time to use this technique? ◦ what can go wrong? ◦ eg More chance of melting the job ◦ eg what are the causes of problems when soldering, eg - heat in the wrong place, dirty surfaces, not enough flux etc.

Lesson plan

Suitable for level 1, 2, 3

Lesson plan – 2 hours

1. soldering

Learning outcomes

- develop general soldering skills
- how solder faster
- develop dexterity – using both hands to solder
- students will learn why soldering sometimes fails.

Skills

Soldering.

Resources needed

1. soldering torch and solder block
2. silver sheet and solder
3. flux
4. tools: soldering probe, snips, borax brush.

Step	Additional notes	Timings	Key teaching points
Prior to lesson			Health and safety ◦ the learners need to be familiar with the soldering equipment that will be used ◦ the workshop/classroom should have the required ventilation/extraction for soldering and pickling activities ◦ burns kit and fire extinguishers should be present ◦ the learners must use industry standard soldering probes with heat resistant handles and not attempt the skill with steel tweezers ◦ wearing goggles is not normally required in industry to solder silver however, they should be worn when placing objects in or removing from pickling agents.
Prior to lesson			Prepare the material ◦ provide four squares of silver, two slightly smaller than the other two to be soldered together – four sides provide opportunities to practice the skill. This should be prepared prior to the class if possible, to allow more time to focus on skill.
1		10 minutes	Learner prepares for soldering – cut solder, prepare flux, checks torch.
2		30 minutes	The learner then solders one side of one of smaller squares on top of one of larger squares using the traditional method of placing solder using a borax brush – the learner should time this
3		10 minutes	The learner then practices 'balling up', small pallions of solder using a torch.
4	Stretch and Challenge	30 minutes	Repeat stage 3 but instead apply balled solder to two pieces of silver but without timed element – this new technique will need some practice.
5	Stretch and Challenge	30 minutes	Once comfortable with the technique, the learner should try timing themselves in soldering one side of square using the new technique to see if they can do this quicker than the more traditional technique.
6		10 minutes	Provide discussion time for learner to analyse their performance.

Evaluation & reflection

- evaluate findings from the group and the learner to work out the percentage of time saved using the new technique
- discuss and feedback the barriers overcome using this new soldering technique – discuss including practice time for this type of soldering
- reflect upon when this technique may be best employed for example, when soldering long sections together.

Additional info

- these techniques can be adapted to work at all levels and tasks
- don't be afraid to change the complexity of the task with the learners.

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Charity number 1001586. Company number 02535199. VAT registration number GB945610716.