



pastry cook

Pastry cooks prepare a range of sweet and savoury products for sale. Products include pies, sausage rolls, small and large cakes, biscuits and danishes.

The work process includes preparation of ingredients, mixing ingredients, shaping the dough, filling the pastries, baking, finishing or icing, and cleaning the equipment. Generally, a mixture of hand and machine work is undertaken. Whilst the steps are listed separately the pastry cook frequently moves from one step to the other and back again depending on production stage.

Pastry cooks work shifts of 6 to 8 hours on average, often during the early morning hours. Breaks are usually intermittent and taken at available opportunities in the process.

work environment

- > tiled or concrete floor which can become slippery
- > multiple work benches 85-90cm high (waist height) on average and 80cm deep on average
- > artificial overhead lighting and natural lighting
- > ventilation usually over cooking tops and ovens
- > temperature within comfort zone
- > low level noise
- > limited storage space

tools and equipment used

- > knives of various sizes
- > 2 handed cutters
- > scrapers
- > whisk
- > rolling pins
- > mixers of various sizes at floor or bench heights
- > dough breaker
- > industrial ovens accessed by front opening doors – up to 10 ovens in one location
- > metal rod for rolling thinned dough
- > crates measuring 60 x 67cms and 14cms deep on average
- > cooking pots of varying sizes
- > mixing bowls up to 42cm diameter
- > gas stove top
- > weighing scales
- > deep fryer
- > wooden tongs
- > shelving racks (19cm – 190cm) for storage or oven use
- > commercial bench-top dishwasher
- > sink (91cm high and 32cm deep on average)
- > baking trays (73cm x 39cm on average)
- > microwave oven(s)
- > wheeled storage tubs

personal protective equipment

- > closed in rubber soled shoes
- > latex / vinyl gloves (may wear cotton gloves underneath)
- > uniform and / or apron
- > head cover / hair net
- > oven mitts

human factors

physical factors

- | | |
|------------------------------|---|
| reaches | > Ranges from overhead to floor level |
| controls and displays | > Knobs, levers and push button - analogue and digital displays |
| force exertion / lift | > Up to 25kgs lift between floor and waist level
- low level push/pull force at maximum of 8kgs |
| endurance required | > Constant standing |
| static muscle loading | > Frequent static neck flexion and shoulder abduction |
| work / rest patterns | > Short breaks as per work demands, generally in standing position |
| frequency of handling | > Constant product handling and raw ingredient handling |
| grasping requirement | > Palmar grip for tray, power grip in scooping raw ingredients and handling dough, pinch grip of finished product |

social, interpersonal and psychosocial factors

- > Generally works with others as a team
- > Provides supervision or is supervised
- > Production of some products can become monotonous and use minimal skill

cognitive factors

- > Information ordering
- > Memorisation
- > Ability to apply mental arithmetic
- > Ability to shift back and forth between two or more activities
- > Ability to quickly respond to a signal

task analysis - preparation of pastry or filling



The dry ingredients are stored in bags, tubs or boxes near the bench. The ingredients are usually scooped or poured into a container for weighing. Ingredients are poured into large bowls for combining. Other ingredients such as butter, chocolate etc may be melted in a pot/microwave. Stirring may be required with a large spoon or whisk during melting. Melted ingredients are carried in the pot to the bench and then added to dry ingredients.

Bowls are then carried to mixers and ingredients poured into mixer bowls.

Note: Some bakeries may miss this step and place ingredients directly into mixer bowls.

Approximately 12 mixtures per shift taking up to 2 hours are prepared per operator.

physical demands	frequency	comment
standing	constant	
walking	frequent	6-9 metres up to several times per mixture
lifting / carrying - floor to waist	occasional frequent	up to 25 kgs up to 10 kgs
trunk flexion	occasional	up to 90 degrees
elbow flexion	frequent	up to 90 degrees
shoulder flexion	frequent	up to 90 degrees
squatting	rare	
power grip	frequent	
forearm rotation	frequent	up to 180 degrees
unilateral shoulder abduction	frequent	up to 90 degrees

task analysis - mixing



Ingredients are carried to the mixing bowl either individually or pre-combined in the bowl during preparation task described previously. Mixing blade is attached, a lever may be pulled to raise the bowl into correct place, any equipment guarding provided is attached or moved into place, and controls operated. During the mixing process, the operator checks the consistency of the mixture and may scrape the side of the bowl or mixing blade with a scraper.

This process takes approximately 15 minutes per mixture. Approximately 12 mixtures are made per shift per operator.

physical demands	frequency	comment
standing	constant	
walking	occasional	3 - 9 metres on average to carry to mixer and then minimally during process
lifting / carrying	occasional	up to 10 kgs
trunk flexion	occasional	up to 90 degrees
power grip	occasional	
fine manipulation	occasional	operate controls
unilateral upwards push / pull force	occasional	variable force

task analysis - shaping the dough



The mixed pastry dough is removed from the mixer by pouring into another container or scooping directly out of the bowl, and placed on the bench. The dough may be kneaded and/or flattened by hand or with a rolling pin or machine such as a dough breaker. The dough is then rolled and/or cut to shape either by hand or machine. Flattened dough may also be folded for storage and later use. Dough may be scooped directly into machine for shaping. Shaped dough is then placed on tray for filling or baking.

Croissants are shaped by hand. Doughnuts are left to rise before and after cutting.

This task may be performed over a full shift.

physical demands	frequency	comment
standing	constant	
walking	occasional	1 metre on average per dough load and then minimally around bench
lifting	occasional	5 - 15 kgs
	frequent	100 - 200 grams
shoulder flexion	frequent	reach across bench / belt
palmar grip	frequent	flattened dough
fine manipulation	frequent	operation of machine controls
if manual		
power grip	frequent	
repetitive shoulder flexion / extension	frequent	use of rolling pin
wrist extension and downward pressure through wrist	frequent	use of rolling pin
pinch grip	frequent	

task analysis - filling the pastry



Filling may be:

- > scooped in by hand
- > scooped in by spoon
- > poured from a jug
- > piped from a piping bag.

The filling process may also be mechanised.

Pies may be covered with pastry by placing a sheet on top of the single pie or full tray. A rolling pin is then run over the top to cut the pastry to the required shape. Sometimes, pre-cut sections of pastry may be placed on top. The edge of the pie may be crimped by hand. Wastage is removed by hand. Trays are then placed on a trolley or a rack.

This task takes approximately 5 minutes per tray and may continue for up to 12 trays per mixture.

physical demands	frequency	comment
standing	constant	
walking	frequent	6-9 metres on average to obtain/return items once or twice during task and trays at end of each repetition
lifting / carrying	rare frequent	up to 20 kgs – bucket of filling 4 - 5 kgs – loaded trays
trunk flexion	frequent	up to 45 degrees - scooping
static / dynamic shoulder flexion / extension	constant	reach between 10cm and 170cm and across trays/bench
static / dynamic power grip	constant	piping bag or product in hand or rolling pin
static neck flexion	constant	
repetitive forearm rotation	constant	if scooping or pouring
wrist flexion / extension	frequent	piping
pinch grip	occasional	crimping

task analysis - baking



Depending on the design of the oven, either:

- a. Tray is taken from rack, held with one hand whilst opening door and placed into oven. Trays are turned for even cooking during baking process. Trays of cooked product are removed and placed on rack for cooling.
- b. Trolley containing products is pushed directly into oven after opening door. Trolleys are removed once product is cooked and left for cooling.

Oven controls and timers are operated.

It takes up to 20 minutes to bake products. The baking process may be repeated for several hours of a shift.

physical demands	frequency	comment
standing	constant	
walking	frequent	3 - 6 metres on average to/from oven
lifting / carrying (process a)	frequent	up to 5 kgs
trunk flexion / squatting	occasional	lower ovens
push / pull force	frequent	trays 4 – 8 kgs
power grip (process b)	frequent	
palmar grip (process a)	frequent	trays
shoulder flexion	frequent	up to 160 degrees
exposure to heat	frequent	

task analysis - frying



Doughnuts are fried by placing them in basket and lowering it into hot oil. Doughnut may be turned over using wooden sticks during frying process. Cooked doughnuts are removed from the oil and allowed to cool slightly before taking them individually by hand and placing them on a tray for complete cooling.

physical demands	frequency	comment
standing	constant	static
walking	frequent	3 - 6 metres on average to/from fryer
lifting / carrying	frequent	up to 5 kgs
shoulder flexion	frequent	up to 90 degrees across fryer and 160 degrees to trolleys
elbow flexion / extension	frequent	0 - 90 degrees
hook grip	occasional	basket
tripod grip	frequent	tongs
exposure to heat	constant	

task analysis - finishing - cake filling



Once cooled, the product is iced and decorated as appropriate.

cake filling

Cakes may be cut horizontally with a large knife and filled with cream, jam etc which has been prepared as described previously and generally scooped by hand from container and placed on middle of cake. Cake pieces are then placed on top of each other.

physical demands	frequency	comment
standing	constant	
lifting / carrying	rare	20 – 25 kgs (buckets)
	frequent	1 - 5 kgs
power grip	frequent	
forearm rotation	frequent	
shoulder flexion	frequent	20 - 45 degrees
shoulder rotation	constant	90 degrees
trunk flexion	frequent	forward flexion up to 90 degrees
neck flexion	frequent	

task analysis - finishing - icing



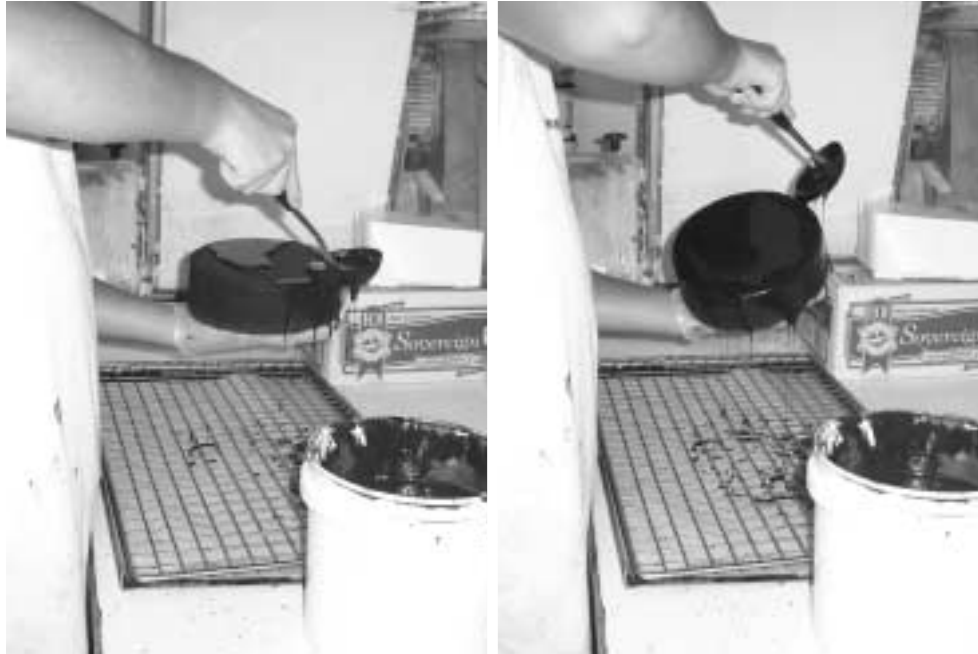
Icing mix is prepared by mixing icing sugar, colouring, cream etc in a mixing bowl. Icing mix is placed in a tub and the tub placed on a bench. The cake is taken from storage and placed on the bench. When icing, the cake is either held on the flat of the non-dominant hand or placed on a turntable. A spatula is used to remove icing from the tub and spread thickly over the sides and top of the cake. The spatula is then used to smooth the icing, whilst rotating the turntable or forearm, until the operator is satisfied with the finish. A small metal tool may be used to create a serrated patterned edge by rubbing it over the icing. Cake sides may be covered with food pieces such as chocolate chips, hundreds and thousands, etc by scooping food pieces in one hand and rubbing them around the side of the cake. The cake is then returned to storage.

Icing square cakes may involve icing the top of the cake and then cutting into logs. Full icing of square cakes requires more wrist deviation to turn cakes so that the sides can be iced while the operator is holding the cake on the flat of the hand.

Icing small cakes requires greater precision and fine motor skills. Icing is generally completed by hand with a small knife, one product at a time.

Ganache icing of cakes involves pouring liquid icing from a jug or spoon over the cake surface while the cake is held on a rack or hand.

Fondant icing (or plastic icing) is kneaded and rolled flat before being picked up and placed over the top of the cake.



physical demands	frequency	comment
standing	constant	
walking	occasional	6 - 9 metres to / from storage and mixer per cake or group of cakes
lifting / carrying	rare	20 – 25kgs
	frequent	1 - 5kgs
power grip	frequent	
forearm rotation	frequent	holding cake or manipulating spatula
wrist deviation / extension	frequent	holding cake or manipulating spatula
shoulder flexion	frequent	20 - 45 degrees
shoulder rotation	constant	unilateral only up to 90 degrees
shoulder abduction	frequent	unilateral only up to 90 degrees
trunk lateral flexion	frequent	
neck flexion	frequent	
repetitive elbow flexion / extension	frequent	fondant icing
wrist extension with downward pressure	frequent	fondant icing

task analysis - finishing - decorating



This may involve applying an edging or pre-prepared items to the cake. Icing or cream is scooped from the tub either by hand or spatula and placed in a piping bag. Grip force is used to push icing to tip of bag. To apply icing to cake, piping bag is squeezed with both hands and moved around the cake with whole arm movements to create an edging or individual rosettes.

Pre-prepared items such as chocolate shapes may be placed on the top or side of the cake. Additional liquid such as icing or jam may be poured onto the top of the cake. If a greeting is added, melted icing in a paper pen is used to write on the top of the cake. This requires precise hand control.

Decoration may take between 5 and 30 minutes per cake depending on the size of cake and degree of detail involved.

physical demands	frequency	comment
standing	constant	
sitting	frequent	depending on bench design and task performed
lifting / carrying	rare	20 – 25 kgs
	frequent	1 - 5 kgs
power grip	frequent	
tripod grip	occasional	writing
pinch grip	occasional	pre-prepared items
forearm rotation	frequent	
wrist deviation / extension	occasional	squeezing piping bag
shoulder flexion	frequent	20 - 45 degrees
neck flexion	frequent	

task analysis - finishing - glazing



Glazing is purchased in powder form and poured into a mixing bowl. Water is added and the glazing mixed by hand until the appropriate consistency is achieved. Glazing may be poured mechanically or applied by brush held in the hand to top of savoury items located on a tray. Tray is lifted on and off machine or bench and either returned to a rack or placed into oven after glazing.

Glazing generally takes 5-10 seconds per item if done manually but may take several hours if undertaken mechanically due to volume of items.

physical demands	frequency	comment
standing	constant	
lifting / carrying	rare	20 - 25kgs
	frequent	1 - 5kgs
tripod grip	frequent	brush
palmar grip	frequent	trays
wrist deviation / extension	frequent	brush
shoulder flexion	frequent	20 - 45 degrees
	occasional	up to 160 degrees to place tray on rack
shoulder rotation	frequent	up to 90 degrees if manual
neck flexion	frequent	
trunk flexion	occasional	trays to lower levels of rack or ovens

task analysis - cleaning



Equipment is cleaned after use by the operator or a dedicated cleaner at a sink. High pressure hoses are used to remove material from containers. A commercial dishwasher is used in some cases.

physical demands	frequency	comment
standing	constant	
trunk flexion	frequent	
lifting / carrying	frequent	1 - 5kgs
shoulder flexion	frequent	20 - 45 degrees
shoulder rotation	constant	90 degrees
power / palmar grip	constant	dependent upon equipment