



Oxford Cambridge and RSA

Tuesday 10 June 2025 – Morning

**A Level in Design and Technology:
Fashion and Textiles**

**H405/02 Problem Solving in Fashion and Textiles
Resource Booklet**

Time allowed: 1 hour 45 minutes



INSTRUCTIONS

- Use this Resource Booklet to answer **all** the questions.
- You should spend **35 minutes** reading this Resource Booklet.
- Do **not** send this Resource Booklet for marking. Keep it in the centre or recycle it.

INFORMATION

- This document has **8** pages.

ADVICE

- Read this Resource Booklet carefully **before** you start your answers.

The stimulus in this booklet relates to issues and opportunities encountered when developing and manufacturing workwear.

Introduction to the Construction Industry

The construction industry includes a wide range of job roles including bricklayers, carpenters and electrical engineers. People employed in the industry to carry out these job roles are sometimes referred to as tradespeople. They often work in a practical environment and use their hands and tools to complete specific tasks.

The construction industry employs over 2 million people in the United Kingdom (UK). It is expected to be an area of continued growth in the future as a result of developments in the infrastructure of towns and cities around the UK.



Electrician
Installs, inspects and tests electrical equipment



Carpenter
Uses natural resources to build and repair wooden fixtures



Site Manager
Organises work on a site or project



Bricklayer
Lays bricks, stones or blocks to create walls or structures

Reliable and functional workwear is essential for tradespeople. The key features of workwear are listed below:

Key Features of Workwear

- Protection – from impact, heat, cuts and abrasions.
- Heat or insulation – may be working outdoors or in unfinished buildings.
- Functional – pockets for storage.
- Easy and comfortable to wear – have stretch to allow the user to concentrate on tasks.
- Durability – must be able to withstand wear and tear and regular use.

Tool Belts and Workwear Used by Tradespeople

The tool belt shown below is typical of those worn by tradespeople in the construction industry.



Product Description

Parachute clip on waist band with adjustable webbing strap.

Metal popper fastening on pocket.

Eyelets used to attach pouches to waist band.

Polyester thread used for all stitching.

Heavy duty cotton canvas fabric backing.

Reinforced pockets and loops made from suede.

The tool belt shown above is made from woven cotton and features a suede reinforcement. It would usually be worn over clothing such as jeans. However, for some tradespeople they will need additional protection when working. For example, some job roles will need trousers that incorporate deeper pockets from the tool belt as well as additional protection in areas such as the thighs and knees to enable tradespeople to work safely and comfortably.

Fibres and Fabric Used in Workwear

Leather or suede are often used in workwear accessories such as gloves, boots and belts. This material is not, however, well suited to clothing as it can restrict movement and is bulky and hot.

An alternative fabric suitable for use in workwear is one that incorporates smart or modern fabrics for the garment or key areas such as pockets. Advances in manufacturing technology for these fibres has enabled them to be more widely available and more economical for use in commercial production.



Polyester Gore-Tex fabric.

Gusset on thigh pocket for additional storage. Velcro closure. Base of pocket laminated polyester microfibre.

Knee patches made from laminated polyester microfibre with space to insert knee pad and side zip closure for security. Reflective piped edge for visibility.

Pull on elasticated waist with mock fly.

Aftercare:



Dark blue heavy duty ripstop cotton fabric.

Zip and button fly at waist.

Detachable polyester microfibre knee patches with pocket to add knee pads if required.

Knee patches attached with Velcro.

Double stitch seams for strength.

Aftercare:



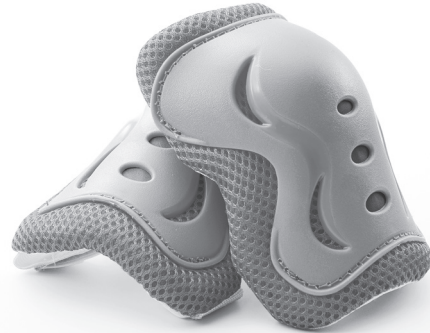
Further Protection

To add further protection for tradespeople working at low levels and awkward positions, knee pads are necessary. They can be made from rubber or smart materials that absorb impact or mould to the shape of the user's body. Different styles are available and they can be worn over trousers or inserted into integrated pockets or pouches in clothing.

Replaceable knee pad



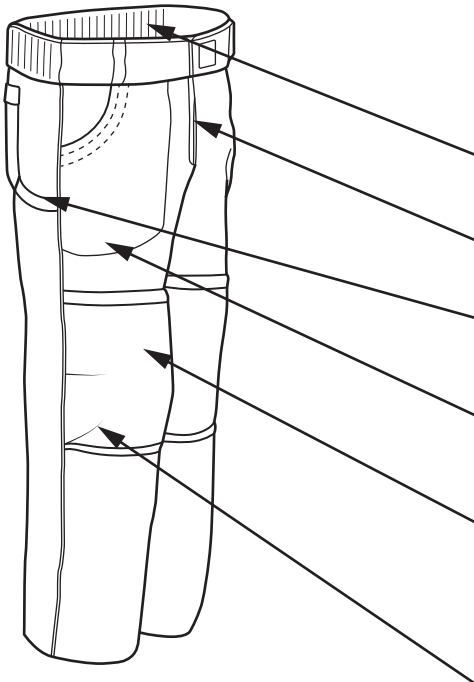
Knee pad which can be worn over trousers



Functional Workwear

Safe Side is an established company that was founded by a group of tradespeople who wanted enhanced functionality in their workwear clothing and accessories.

Designers at Safe Side have sketched out their own design for trousers. They have adapted the pouch to insert a knee pad as they found that on other trousers it came open at the seam on the side and was not very durable. They will use a bottom opening and sell knee pads separately so customers can choose appropriate sizes and types for their needs.



Gore-Tex Trousers

Made from Gore-Tex stretch fabric.

Elasticated waist at back for comfort and stretch to allow movement.

Velcro fastener at waist with button fly.

Hammer loop on side for convenience.

Polyester microfibre front patch pockets and knee pockets, double stitched at opening and seams for strength.

Knee pockets are bottom loading to create a pouch to insert a knee pad. Knee pads purchased separately so pouch will be standard size.

Knee pockets have darts.

Statistical Data

Health and safety concerns within the UK construction industry cannot be ignored. There are ongoing efforts to improve standards and reduce risks for tradespeople.

Despite improvements in safety regulations and practices, work-related injuries continue to occur. The Health and Safety Executive (HSE) regularly publishes statistics on accidents and incidents in the construction sector, highlighting areas for improvement. Falls from height remain a leading cause of serious injuries in construction. Efforts to prevent falls have included improved training, use of safety harnesses and guardrails and stricter regulations regarding working at height. Initiatives to promote safer practices and technologies continue to be developed and implemented.

Risks

Tradespeople are exposed to various health risks including exposure to hazardous substances, noise pollution, and musculoskeletal disorders (MSDs) from repetitive tasks and heavy lifting. Efforts to mitigate these risks have included better ventilation systems, personal protective equipment (PPE) and ergonomic assessments.

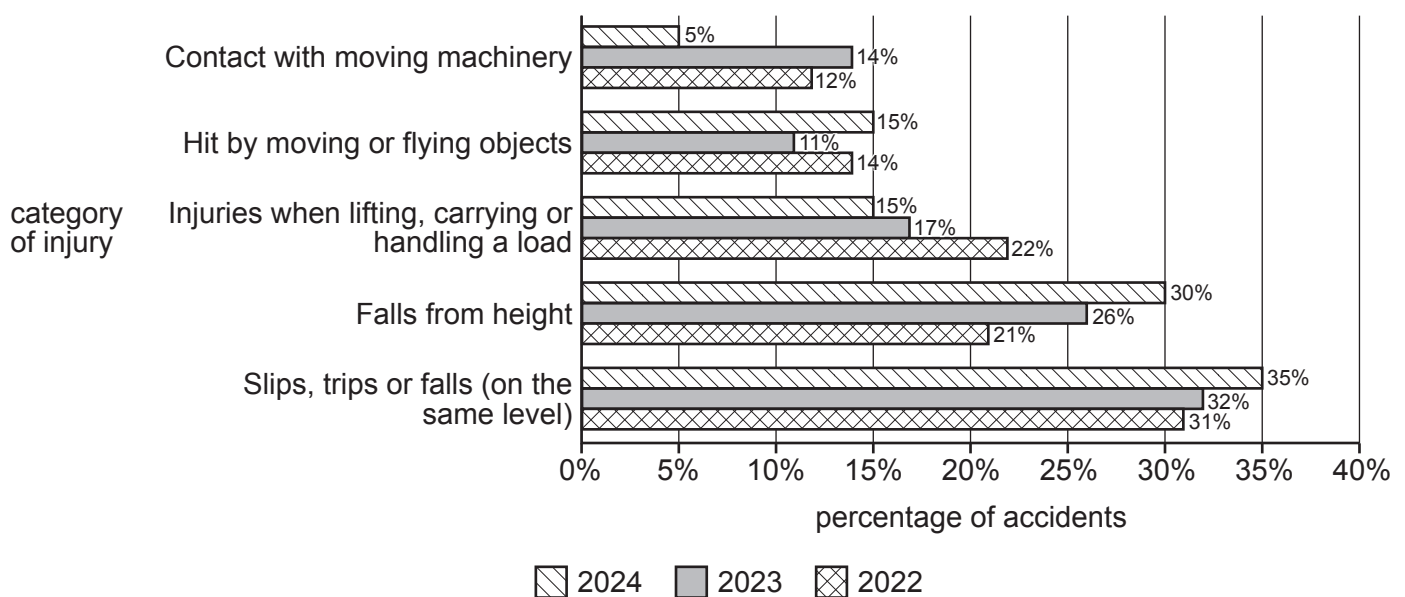
Safe Side Survey

Safe Side conducted a survey over a 3-year period (2022–2024). This related to reported industrial accidents for its tradespeople within the construction industry. The survey indicated five specific categories of injury:

- Contact with moving machinery.
- Hit by moving or flying objects.
- Injuries when lifting, carrying or handling a load.
- Falls from height.
- Slips, trips or falls (on the same level).

The results of the survey were as follows:

Survey Results 2022–2024



Whilst carrying out the survey, Safe Side calculated that the probability of an accident occurring on any given day in a construction company is 0.03.

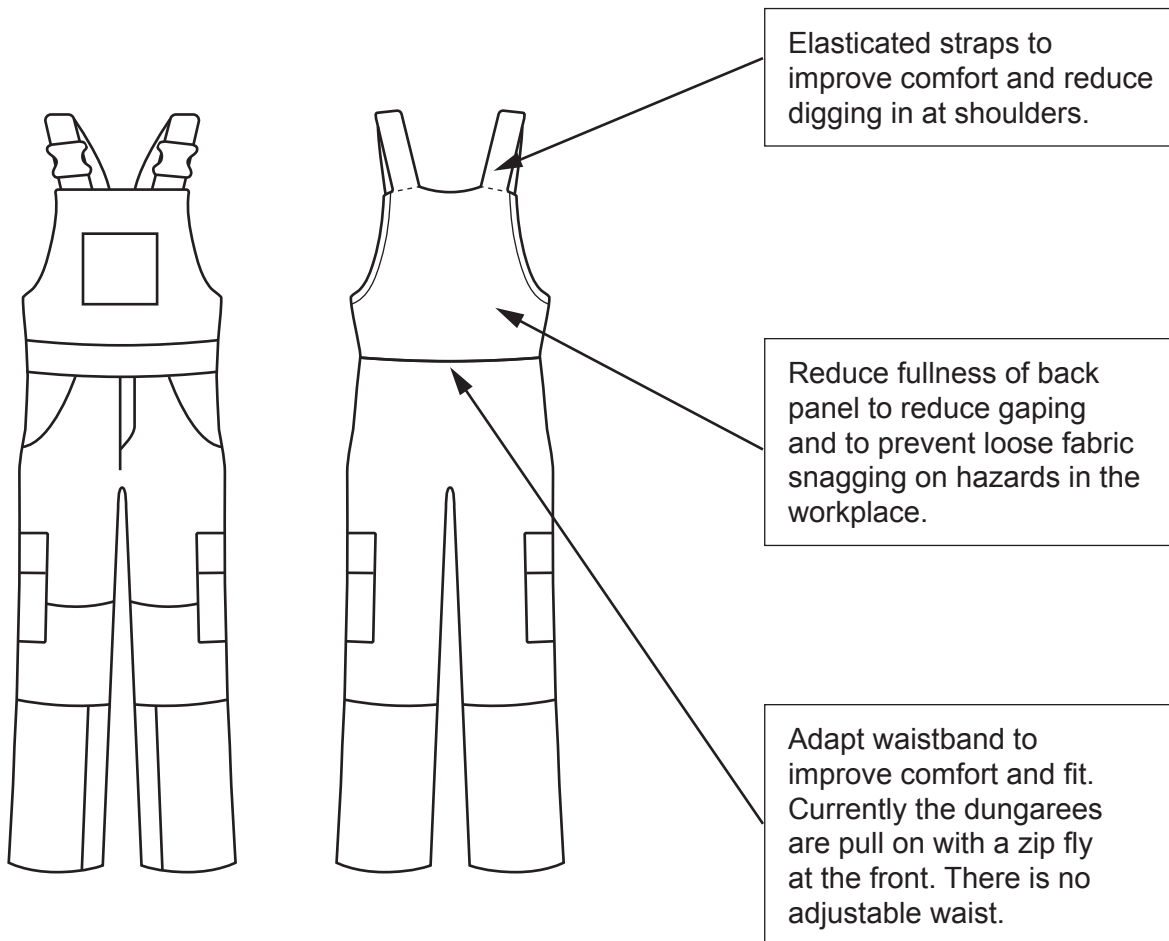
Diversity in the Workforce

While the construction industry continues to grow and develop, so has the workforce. This has resulted in the workforce becoming more diverse. To accommodate tradespeople of all genders and with a broad range of physical attributes, dungarees are seen as a useful alternative to trousers.

Dungarees can provide more protection for the torso and can stay in place more comfortably than trousers when bending, stretching and crouching as the straps often feature an adjustable parachute clip buckle.

Safe Side has been researching existing examples of workwear dungarees, sometimes referred to as bib and brace.

It has found that they are available in a range of sizes with convenient pockets and pouches that are similar to those found on the trousers Safe Side already sells. Designers at Safe Side have identified areas on the product where amendments could be made to improve the fit which they think would make the dungarees better suited to a wider range of customers.



Product Enhancement

Safe Side has bought the designs for the bib and brace dungarees from a smaller company. They have identified a need for workwear that has high visibility panels in response to the research on workplace injuries and accidents and to support tradespeople working in low light.



Recent changes to the safety standards say that any high visibility panels must not be covered up by the wearer, for example by tucking them into boots. Designers at Safe Side have positioned the panels higher up on the leg to take account of this requirement but are keen to investigate other ways to enhance the functionality of the bib and brace dungarees.

They want to find ways to appeal to tradespeople who need protection from the weather when working outside and from direct sources of heat such as naked flames. Designers want to use the existing design but with enhanced performance through the use of finishes.



Safe Side has existing workwear in its online catalogue which includes smart and modern materials. Designers are looking for additional ways to introduce technical or e-textiles into the product range. They think this will make Safe Side stand out from other companies on the market and offer characteristics that do not exist elsewhere. By taking this action the designers want to appeal to tradespeople working alone in remote places or hazardous environments.

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