

### Overview

This standard is for printers using multiple-station screen printing machinery. A multiple-station screen printing machine is one which has more than one screen printing frame/unit such that substrates are printed in two or more colours in sequence to produce a multi-colour printed image.

Screen printing machines are found in many configurations, including automatic and semi-automatic flatbed machines, automatic cylinder machines and 3-dimensional object printing machines. This standard is suitable for any of these, providing it has more than one printing station on it and is capable of printing two or more colours in one pass of the substrate.

Flat-bed screen printing machines are particularly versatile and can print on a wide range of substrates from paper and board to metals, rigid plastics, wood, glass, textiles and ceramics. Where the substrate is impervious, the inks usually need to be 'cured'. This standard may be used by screen printers who print on any type of substrate.

The common feature of all screen printing machines is the process by which the printed image is made onto the substrate: this is achieved by a screen (mesh) of suitable specification for the ink and image to be printed being fitted to the machine. A stencil over the screen determines the area where ink can pass through the screen on to the substrate. Ink is delivered onto the screen by a flood coater and a squeegee passes over the screen, pushing the ink through the screen. It is important to control the squeegee angle, pressure, speed, snap off-on contact and peel off in order to achieve good printed results, and this standard requires the printer to be competent in making all such adjustments to achieve high quality printing.

If problems should occur, such as mis-register or colour variation, they should be dealt with by the printer. The printer must quickly identify faults that cause the output to fall below an acceptable quality and deal with the problem with minimum waste of substrate and time.

There are various methods for maintaining quality, ranging from the experienced eye of a printer matching to a hard proof, to the use of spectrophotometers and densitometers that read colour bars to ensure the required density of ink is being printed, or that dot gain is controlled within acceptable standards. The operator is

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expected to be able to competently use whichever method is required by his/her company.

In addition to being able to produce commercially acceptable work, the operator must be competent to change screens, stencils, squeegees, inks and control any drying and transport equipment that forms part of the machine.

### Performance criteria

### Prepare a multiple-station screen printing machine for production

- You must be able to:
- P1 check that you have all the details required for the job
  - P2 check that you have enough materials of the right type for the job
  - P3 promptly report to your manager, if the material provided is not correct or sufficient
  - P4 fit screens and stencils correctly
  - P5 check that the inks are suitable for the job
  - P6 make sure that the image is positioned correctly
  - P7 load materials correctly
  - P8 set up the screen printing machine to run efficiently so that:
    - P8.1 the printed image is clean and sharp
    - P8.2 the image is even across the printed area
    - P8.3 the image is in the correct position
    - P8.4 the image matches the required colour standard
  - P9 check that:
    - P9.1 your work area is safe and ready for production
    - P9.2 all safety devices are in place and working correctly
  - P10 check that:
    - P10.1 a sample is produced and inspected against the company's quality standard
    - P10.2 appropriate adjustments are made, if the standard is not met
  - P11 report promptly to your manager, if the standards cannot be met

### Run and monitor a multiple-station screen printing machine

- You must be able to:
- P12 run and monitor multiple-station screen printing machines:
    - P12.1 at the required speed
    - P12.2 with minimum downtime
    - P12.3 to the required quality standard
    - P12.4 safely and efficiently
  - P13 check that materials are correctly loaded and unloaded
  - P14 check regularly that:
    - P14.1 materials meet the specification
    - P14.2 the machine runs safely and efficiently, at the required speed
    - P14.3 any colleagues use safe and efficient working practices

- P14.4 printed output is forwarded to the next stage in accordance with production requirements
- P15 check that the supply of materials is maintained throughout the run
- P16 regularly check that the image quality meets the required standards for:
  - P16.1 strength
  - P16.2 evenness
  - P16.3 register
  - P16.4 position
  - P16.5 size
- P17 follow the correct procedures for the removal of waste
- P18 accurately record the production and quality assurance details required

**Assist in fault finding and correction on a multiple-station screen printing machine**

**You must be able to:**

- P19 accurately identify the cause of problems which:
  - P19.1 affect the quality of the image
  - P19.2 reduce the rate of output
  - P19.3 create risks to health and safety
- P20 promptly correct faults that it is your job to correct
- P21 promptly report faults that it is not your job to correct check that machines are safe to operate, once faults are corrected

### Knowledge and understanding

You need to know and understand:

#### The law as it affects printing

- K1 defamation
- K2 copyright and ownership of images
- K3 obscenity
- K4 forgery

#### Health and safety

You need to know and understand:

- K5 your legal duties for health and safety in the workplace as defined by the relevant health and safety legislation
- K6 your duties and responsibilities for health and safety as defined by any specific legislation covering your job role
- K7 workplace policies and procedures
- K8 working practices
- K9 hazards and risks in the workplace, their assessment and the action to take to deal with them
- K10 hazards and risks in your own job, their assessment and the action to take to deal with them - including relevant regulations on the safe handling of equipment and materials.
- K11 manufacturer's health and safety requirements relevant to your job
- K12 what personal protective equipment should be used in your job
- K13 how to stop a machine in the event of an emergency

#### Security and storage

You need to know and understand:

- K14 print with time-sensitive or restricted release dates
- K15 high value products or print with a high risk of theft

#### Communication

You need to know and understand:

- K16 how to communicate with colleagues, customers and suppliers

#### Workplace policy and practice

You need to know and understand:

- K17 workplace objectives, priorities, standards and procedures

- K18 the range of work carried out in the workplace
- K19 the working practices existing in the workplace
- K20 the key job roles within the printing and graphic communications industry and their main purposes

**The identification and assessment of printing options**

You need to know and understand:

- K21 the stages in the printing process from pre-press to printed product

**Time and resources**

You need to know and understand:

- K22 the different types of resource, including labour, materials, machinery
- K23 the relationship between resource usage and profitability
- K24 how to maximise productivity
- K25 the relationship between productivity and competitiveness

**The operation of equipment**

You need to know and understand:

- K26 the range of adjustments and settings on multiple-station screen printing machines
- K27 the operating practices and procedures for multiple-station screen printing machines
- K28 the use of colour control equipment, including densitometers and spectrophotometers

**Printing**

You need to know and understand:

- K29 the principles of screen printing

**The causes and treatment of common faults**

You need to know and understand:

- K30 raw material faults
- K31 processing (printing) faults
- K32 machine faults

**Administrative procedures**

You need to know and understand:

- K33 recording and reporting
- K34 product labelling

### **Environmental**

You need to know and understand:

- K35 the legal requirements for the classification, storage, carriage and disposal of waste
- K36 any specific environmental legislation that covers processes in your company
- K37 role of statutory authorities / agencies
- K38 control of pollution

### **Quality assurance and control**

You need to know and understand:

- K39 the main features of quality assurance and quality control systems
- K40 techniques for controlling quality, including inspection, testing, sampling, use of input and output controls
- K41 equipment for controlling quality in machine printing
- K42 light standards for viewing and assessing colour print

### **Problem solving**

You need to know and understand:

- K43 types of problems that may need to be solved
- K44 sources of information
- K45 techniques for solving complex problems
- K46 techniques for assessing machine faults

### **Materials**

You need to know and understand:

- K47 the types and characteristics of paper, board and other commonly used substrates
- K48 the types and characteristics of inks, coatings and coatings
- K49 how to maintain the quality of materials during storage and handling
- K50 the types and characteristics of inks, coatings and coatings

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**Proofing**

You need to know  
and understand:

K51 the principal types of proof and their role in the printing process



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