



Australian Government

Department of Education, Employment and Workplace Relations

ICPPR421C Set up for complex gravure printing

Revision Number: 1

ICPPR421C Set up for complex gravure printing

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit describes the performance outcomes, skills and knowledge required to set up for non-routine gravure printing.
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Application of the Unit

Application of the unit	This unit requires the individual to set up gravure printing machines for non-routine print jobs. The individual will conduct a proof run and adjust settings to ensure production speeds are attained.
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Confirm non-routine job specifications	1.1. Job requirements are read and interpreted from job documentation or production control system 1.2. Set up is planned and carried out correctly in minimum time with minimum wastage 1.3. Availability of all job related components is checked
2. Set up reels	2.1. Unwind and rewind reels are set up and adjusted according to job specifications 2.2. Webbing procedures are carried out according to non-routine job specifications 2.3. Web-control system is set up and adjusted according to job specifications 2.4. Reels are spliced/joined according to job specifications 2.5. Printed web viewing devices are set up and adjusted according to job specifications 2.6. The folder and sheeter is set up and adjusted according to job specifications 2.7. Set off/marketing prevention devices are set up and adjusted according to job specifications
3. Select and prepare inks and additives	3.1. Inks , dyes or additives are selected according to job specifications and end-user requirements 3.2. Quality and suitability of inks, dyes or additives are checked and appropriate action is taken 3.3. Inks, dyes and additives are prepared according to OHS requirements, and manufacturer's/supplier's instructions with suitable precautions to minimise waste 3.4. Correct colour and weight/volume of ink are mixed and prepared to match the requirements of the printing process and job specifications 3.5. Formulation of the ink, colour match and the approved colour are appropriately recorded 3.6. Inks, dyes and additives are appropriately labelled, handled and stored according to manufacturer's/supplier's instructions to prevent damage and hazards to personnel and prolong shelf life
4. Set up machine for complex gravure printing	4.1. Gravure cylinders are selected, installed, set up and adjusted according to job specifications 4.2. Impression roller is set up and adjusted according to

ELEMENT	PERFORMANCE CRITERIA
	job specifications 4.3. Inking system/doctor blade is set up and adjusted according to the gravure process and job specifications 4.4. Drying system is set up and adjusted according to job specifications
5. Conduct proof run	5.1. Material to be used for proof is organised correctly 5.2. Machine is operated according to manufacturer's and enterprise procedures to produce a specified proof 5.3. Machine is operated according to manufacturer's and enterprise procedures to produce a specified proof 5.4. Production does not commence without client OK or authority where appropriate 5.5. Results are interpreted and adjustments are carried out according to product and machine specifications to determine adjustment requirements

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- OHS in relation to operating machinery such as safely switching off machinery before cleaning is started
- communication of ideas and information by interpreting the job brief and providing advice to internal or external clients about options and limitations
- collecting, analysing and organising information by collecting and analysing data about printing process, machine specifications and performance to calculate appropriate adjustments for the job
- planning and organising activities by providing information about time and materials requirements for production scheduling
- teamwork when cooperating with other workers and coordinating the production unit to ensure efficient operation
- mathematical ideas and techniques by calculating cylinder position, pressures and substrate requirements
- problem-solving skills by recognising proofing faults and calculating adjustments necessary to meet job specifications
- use of technology by using monitoring equipment and computerised production records

Required knowledge

- need to ensure that the job specifications are read and properly understood
- production problems that could eventuate by not reading and understanding the job specifications
- person / people any production problems should be discussed with
- OHS precaution that must be observed when installing printing cylinders on the machine
- determining the optimum print sequence
- visual aid on the cylinder that identifies the colour of ink to be used
- precautions that are taken to ensure that the cylinders are not damaged during installation
- OHS precautions that must be observed when webbing up the machine
- determining the position of the reel
- effect if the brake tension is not set correctly
- function of the "Dancer" roller on a web machine
- effect if the web is not spliced correctly
- workings of the particular web viewing device
- principle of ESA roller operation on the gravure printing machine
- type of substrate that should be used on the ESA roller

REQUIRED SKILLS AND KNOWLEDGE

- OHS precautions that must be observed when setting up the delivery
- controlling of the web in the rewind unit
- result of incorrect rewind tension
- remedial steps that can be taken if there is a possibility of the ink marking in the rewind
- problems that could be attributed to a blunt knife when sheeting
- use of air blast play in the delivery of sheets
- OHS precautions that must be observed when preparing inks and additives
- details that are necessary to check an ink's suitability for the printing process
- special end-use requirements that may be necessary
- additives used in gravure inks
- range in seconds for Zahn cup measurements
- effect foaming has in a Zahn cup when measuring the ink viscosity
- bringing pigmented ink to operating temperature before correcting the viscosity
- essential checks to be made
- advantage of using automatic viscosity controllers
- precautions that you observe to minimise waste when preparing the ink
- shelf life of most inks
- conditions that are relevant to the storage of inks and additives
- conventions that should be adhered to when labelling mixed inks
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- precautions that you observe to minimise waste when preparing the ink
- shelf life of most inks
- conditions that are relevant to the storage of inks and additives
- conventions that should be adhered to when labelling mixed inks
- OHS factors that need to be considered when setting up the machine
- function of chill rollers on a machine
- main advantage of gauging up and dry register prior to printing a job
- result of excess printing pressure
- determining the pressure to be applied to the doctor blade
- print faults that could be caused by excessive overspill of air from the inter-colour drier
- recommended air ratio for efficient inter-colour drying
- advantages of using high velocity air in the drying system
- OHS precautions that must be observed when slitting on the machine
- pre-heat web temperature required for lamination
- reasons for a printed product to be punched
- considerations when setting hole punching in relation to repeat length
- purpose of the dwell when cutting and creasing in-line
- controlling the ratio of print to in-line speed controlled

REQUIRED SKILLS AND KNOWLEDGE

- result of excessive pressure on the slitters
- cause of the doctor blade to wear on a gravure printing unit
- reducing the wear of the doctor blade
- determining the optimum make ready speed for the job
- communicating the steps involved in make ready to other team members
- need to grade the drying speeds of each progressive colour, so that first-down colours dry faster the subsequent colours
- causes of a decrease in web tension
- result of increasing rewind tension after the roll has been partially rewound
- major cause of a telescopic roll
- testing metallised film to find out which is the correct side on which to print
- measuring the metallised surface for coating thickness
- effect of annealing on aluminium foil
- purpose of using thermal imaging face stocks
- metallising substrates
- client requirements for bar codes
- print characteristics that are related to excessive printing pressure
- causes of picking when printing multicoloured work
- print faults resulting from using an over-reduced ink
- causes of moire patterns when printing by the gravure process
- instrument used to identify retained solvent trapped in the print
- purpose of taking Dyne readings
- purpose of the crinkle test when testing an ink
- print faults resulting from a worn doctor blade
- use of ink returning from the ink fountain when checking the viscosity of ink whilst using ink pumps
- problems that result from the excessive use of slow solvents
- reason why laminating inks once printed appear dull and easy to scratch
- result of excessive print area tension
- problems which the printer may associate with cold seals
- responsibility for the final say in the "OK" of the job
- machine manuals, safety and other documentation that are relevant to this task and where are they kept and information that is included in these documents

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Evidence of the ability to:

- set up gravure printing machines for non-routine print jobs. The individual will conduct a proof run and adjust settings to ensure production speeds are attained
- demonstrate use of computerised control, monitoring and data entry systems if available and appropriate
- demonstrate an ability to find and use information relevant to the task from a variety of information sources
- set up a gravure printing machine for a complex job on TWO occasions (if possible using different substrates and if possible including at least TWO in-line processes) according to manufacturer's specifications, enterprise procedures and the Performance Criteria
- evidence for assessment may be gathered from assessment of the unit of competency alone or through an integrated assessment activity.

Context of and specific resources for assessment

Assessment must ensure:

- assessment may take place on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment
- gravure printing machine.

Method of assessment

A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit:

- direct questioning combined with review of portfolios of evidence and third party workplace reports of on-the-job performance by the candidate.

Guidance information for assessment

Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, for example:

EVIDENCE GUIDE

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| | <ul style="list-style-type: none">• ICPPR422C Produce complex gravure printed product. |
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Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Non-routine</i> may include:	non-routine within this context relates to the set up and production of print runs. The set up of equipment and production involves a significant amount of deviation from using standard equipment settings. It also involves significant problem solving and the development of new criteria and procedures for performing current practices. It does not refer to a job that an individual does only occasionally.
<i>Inks/coatings</i> may include:	range of inks commonly used in 3 or more colour printing, including standard and special colours.
<i>Colour matching systems</i> may include:	use of viscosity controls, densitometers and spectrophotometry.
<i>Machines</i> may include:	range of stack, in-line and central impression printing machines with manual, semi-automated, fully automated or computerised process control.
<i>Design</i> may include:	3 or more colours, complex graphics and text. Critical "tight" registration, fit and position, registration should be at least that required for four-colour process work.
<i>In-line processes</i> may include:	minor processes that are integral to this competency can include basic in-line operations such as perforating, numbering, date coding, slitting that do not in themselves constitute another defined unit of competency. Where a major in-line process is defined as a separate competency (eg flat-bed cutting, folding) it should be assessed as such.
<i>Substrate types</i> may include:	range of substrates within the major categories of paper, board, plastics and related films, or metal.

RANGE STATEMENT

Substrate handling may include:	• wide and narrow reel handling systems.
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Unit Sector(s)

Unit sector	
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Competency field

Competency field	Printing
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Co-requisite units

Co-requisite units		