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A Customer Guide to Quality Printing 1993



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1 INTRODUCTION

A Customer Guide to Quality Printing 1993 was developed and prepared by the Quality Assurance Unit, Canada Communication Group (CCG), Public Works and Government Services Canada (PWGSC).

The intent of this document is to establish a common base of principles, practices and understanding between customer departments, contracting agency and suppliers, in selecting the print quality level most appropriate for the product and in the preparation of original material that will allow the quality level to be met.

The guide describes the most appropriate procedure to be followed by both customer and supplier to ensure that the desired quality is achieved.

The three upper quality levels which are described herein are the only quality levels to which specific requirements for the supply of original material apply. These three quality levels are in ascending order: Informational, Library, and Prestige.

Other CCG publications deal with quality levels for Print colour reproduction, typesetting, forms, envelopes, generic identification of paper and paperboard brandnames.

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2 DESCRIPTION AND SELECTION OF PRINT QUALITY LEVELS

2.1 Prestige Quality

In view of the high cost of "Prestige Quality" printing, this category should only be chosen if the intended job meets any of the following criteria:

- (a) The visual appearance has exceptional importance and small cosmetic defects are likely to result in adverse comments during its use (e.g. Prime Minister's stationery);
- (b) The publication requires specialized printing techniques such as colotype printing;
- (c) The quality of the images, whether halftone, linework, or multicolour are vital to the usefulness of the publication; e.g. where halftone illustrations are critical in distinguishing subtle details of fauna or flora (e.g. *Mushrooms of Canada, Birds of Canada*).

2.2 Library Quality

This quality level is strongly recommended if the job meets any of the following criteria:

- (a) The publication has an intended lifespan of ten years or greater and is to be adhesive bound or casebound (e.g. *Native Trees of Canada* and the *Statistics Canada Yearbook*);
- (b) The illustrations are functional to the use of the material (rather than purely pictorial) and must be produced at an above average quality (e.g. professional journals);
- (c) The overall quality characteristics are of above average importance and must be produced to a high quality level (e.g. internationally distributed publications).

2.3 Informational Quality

"Informational Quality" is usually chosen for the majority of Government publications. Typical jobs may contain single colour linework or process colour illustrations and will have an intended lifespan of less than ten years. Should the printed material's primary function be to convey text matter with or without supporting illustrations then adequate quality can be expected at this level. The "Informational Quality" level is the highest quality level that can be chosen for printing jobs on non-paper surfaces such as mylar or paperboard.

**3****SUPPLY OF ORIGINAL MATERIAL****3.1 General Recommendations for all Quality Levels**

All technical reproduction requirements (instructions to the printer) must be clearly marked on the artwork.

Corner marks, trim marks and fold marks must be indicated on camera-ready copy (outside the image area).

For transmission or reflection copy illustrations, all crop marks must be clearly marked on tissue overlays.

Artwork originals should be prepared or presented on artboard to prevent folding or creasing.

Artwork originals must be protected with a dust cover.

To ensure optimum reproduction, enlargements or reductions should not exceed 50% of the original.

Mechanical screens should not be applied to artwork originals requiring reduction; instead, whenever possible, mechanical screens should be applied by the printer.

All overlays for multicolour printing must be securely hinged to the artboard, and be complete with registration marks and special instructions (outside the image area).

Artwork originals should be marked as to customer department origin and contact.

Artwork originals requiring shipping should be protected, front and back, by corrugated cardboard.

3.2 Customer Requirements for Prestige Quality**3.2.1 Photographic Originals**

The preferred medium for supplying colour photography is an original on fine grain transparency film (e.g. Kodachrome or other similar products).

The colour balance of the transparencies must closely approximate the colour balance desired in the final printing. If this is not the case then it is advisable to colour correct the originals by photographic means prior to having the colour separations made.

Though the 35 mm film size is very popular the larger film formats will give superior rendition of detail and will show fewer cosmetic defects when enlarged. The following list of enlargements are considered to be the maximum acceptable for "Prestige Quality".

Original Film Format	Maximum Uncropped Enlargement
35 mm	5 in. × 7 in.
2 1/4 in. × 2 1/4 in.;	14 in. × 14 in.
6 cm × 6 cm	
4 in. × 5 in.; 8 in. × 10 in.	for large reproduction or scientific reproduction quality

Colour transparencies that have identical tone and colour balance characteristics can be separated in groups as long as no individual photograph requires specific adjustments.



Transparencies that have varying characteristics must be separated individually to achieve optimum colour fidelity.

If two language editions are to be printed then it must be ensured that the separation film supplied for each edition is identical. Both sets of film must be produced in the same manner from the original separations with one film Not being duplicated from the other.

When the colour match between the original photograph and the printed copy must be sufficiently accurate for use in scientific or medical applications, the photographer should include colour control patches and a gray scale in the photographs. These can be located outside the live subject area or on an individual frame if there is insufficient area. These control targets should be included in each segment of the photography where the lighting, processing or other variables affecting colour are thought to have changed.

All film originals should be free of scratches, fingerprints and other cosmetic defects and must be kept in protective sleeves.

Black and white continuous tone photographs of average subjects should have a density range approximately equal to 1.25.

Halftones and other mechanically produced photographic copy should only be used if the originals are not available.

3.2.2 Camera-Ready Copy

See general recommendations.

The quality of the camera-ready typesetting must meet the requirements of the "Prestige Quality" level as specified in the PWGSC/CCG publication *Quality Levels for Typesetting 1993*.

Only full paragraphs may be stripped into typeset pages and only four strip-in corrections are allowed on a full camera-ready page, otherwise the page must be reset.

3.2.3 Screen Tints and Rulings

A 133-line screen is normally adequate for good quality halftone reproductions. Where greater detail is required, 150 or 175-line screens will give superior results only if the photographic originals have above average detail and the selected printing stock is suitable. Selection of the best screen ruling and the appropriate paper can be made in consultation with the Requirements Definition Group of CCG.

Flat screen tints of less than 10% and greater than 90% may present reproduction problems and should be avoided. Where delineation is required between a series of flat tints a 10% difference should be considered to be the minimum acceptable difference.

3.2.4 Printing Stock Selection

The selection of the paper stock should be made by considering the nature of the printed image and the function of the publication. Particularly in colour reproductions the finer grades of paper are more suitable for "Prestige Quality". The showthrough of the selected paper as measured by printing opacity should not be less than 93%. On the other hand, materials such as plastics, fabrics, board and newsprint cannot have their printed images specified at this level. The selection of the most economical grade of paper suited to the desired results can be made by consulting the Requirements Definition Group of CCG.



3.2.5 Ink Specification

When requesting a specific ink colour refer to Pantone Matching System (PMS) or other coding systems.

If the job has been previously printed and the reprint colour must match, be sure to check if the original printing, in fact, matched the requested colour. If not, it is necessary to send a printed sample for the supplier to match. Never send a sample and refer to its colour number at the same time without clearly indicating which one the supplier must follow.

3.2.6 Quality Control

The customer along with the Requirements Definition Group of CCG should evaluate all originals and camera-ready copy as to its compatibility to "Prestige Quality".

Colour originals must be evaluated with the standard 5000K illumination.

Blueprints and similar proofs can only be used to check content or positioning, and must not be used for quality determination of halftones. If a customer requires an accurate proof of the halftone quality, a photographic proof should be requested.

All quality evaluations are to be made according to the "Prestige Quality" level specifications found in the PWGSC/CCG publication *Quality Levels for Printing 1993*.

3.3 Customer Requirements for Library Quality

3.3.1 Photographic Originals

Colour photography may be supplied as transparencies or reflection photographic prints.

Uncropped enlargements should not exceed eight times the original film format size.

Colour photographs that have identical tone and colour balance characteristics can be colour separated in groups as long as no individual photograph requires specific adjustments. Photographs that have varying characteristics must be colour separated individually to achieve optimum colour fidelity.

If two language editions are to be printed, then it must be ensured that the separation film supplied for each edition is identical. Both sets of film must be produced in the same manner from the original separations with one film Not being duped from the other.

All film originals should be free of scratches, fingerprints and other cosmetic defects and must be kept in protective sleeves.

Black and white continuous tone photographs of average subjects should have a density range approximately equal to 1.25.

Halftones and other mechanically produced photographic copy should only be used if the originals are not available.

3.3.2 Camera-Ready Copy

See general recommendations.

The quality of the camera-ready typesetting must not be less than the requirements of the "Prestige Quality" level specified in the PWGSC/CCG publication *Quality Levels for Typesetting 1993*.

Only full paragraphs may be stripped into typeset pages and only four strip-in corrections are allowed on a full camera-ready page, otherwise the page must be reset.



3.3.3 Screen Tints and Rulings

A 133-line screen is normally chosen for good quality halftone reproductions. Where greater detail is required, a 150-line screen may be selected if the original material has above average detail. The selection of the best screen ruling and appropriate paper stock can be made in consultation with the Requirements Definition Group of CCG.

Flat screen tints of less than 20% and greater than 80% may present reproduction problems and should be avoided. Where delineation is required between a series of flat tints, a 10% difference is the minimum that should be considered.

3.3.4 Printing Stock Selection

Where colour reproduction is the primary concern a smooth surfaced fine paper should be selected. The showthrough of the paper as measured by printing opacity should not be less than 90%. The most economical grade of paper suited to the particular job can be made by consulting the Requirements Definition Group of CCG.

3.3.5 Ink Specification

When specifying a colour number for a reprint it is important to ensure that the previously printed copies do in fact match the colour requested. Otherwise, a printed sample should be supplied for the current supplier to match. When supplying a sample or colour swatch and specifying an ink colour number, it should be indicated which one the supplier is to follow.

3.3.6 Quality Control

The customer along with the Requirements Definition Group of CCG should evaluate all originals and camera-ready copy as to their capability of being reproduced at the "Library Quality" level.

Colour originals should be evaluated with standard 5000K illumination.

Blueprints and similar proofs can only be used to check content or positioning, and not the quality of halftones. If a customer requires an accurate proof of the halftone quality, a photographic proof should be requested.

All quality evaluations are to be made according to the "Library Quality" level specifications found in the PWGSC/CCG publication *Quality Levels for Printing 1993*.

3.4 Customer Requirements for Informational Quality

3.4.1 Photographic Originals

Colour photography may be supplied as transparencies or reflection photographic prints.

Uncropped enlargements should not exceed ten times the original film format size.

The colour balance of transparencies and prints should closely approximate the colour balance desired in the final printing. Since most colour separations will be made by grouping, it is desirable that the photographs in each group have similar colour characteristics.

If two language editions are to be printed, then it must be ensured that the separation film supplied for each edition is identical.

Halftones and mechanically produced photographic copy can be used but it is not advisable to do so.



3.4.2 Camera-Ready Copy

See general recommendations.

Camera-ready typesetting must, as a minimum, meet the requirements of "Informational Quality" level as specified in the PWGSC/CCG publication *Quality Levels for Typesetting 1993*.

3.4.3 Screen Tints and Rulings

A 133-line screen is the maximum ruling to be selected at this quality level for reproducing good quality originals on a good printing stock. Poor quality originals or lower quality printing stock require a coarser screen ruling and this should be determined by contacting the Requirements Definition Group of CCG.

The minimum difference between flat screen tints should not be less than 20%. Tints of greater than 80% or less than 20% should not be used.

3.4.4 Printing Stock Selection

Where halftone reproduction is the primary concern, a smooth surfaced fine paper should be selected. The showthrough of the paper as measured by printing opacity should not be less than 87%. The most economical grade of paper suited to the desired results can be made by consulting with the Requirements Definition Group of CCG. The "Informational Quality" level is the highest level that can be chosen for non-paper and paperboard printing materials.

3.4.5 Ink Specification

When specifying a colour number for a reprint it is important to ensure that the previously printed copies do in fact match the colour requested. Otherwise, a printed sample should be supplied for the current supplier to match. When supplying a sample or colour swatch and specifying an ink colour number, it should be indicated which one the supplier is to follow.

3.4.6 Quality Control

Colour originals should be evaluated with standard 5000K illumination.

Blueprints and similar proofs can only be used to check content or positioning and not halftone quality.

All quality evaluations are to be made according to the "Informational Quality" level specifications found in the PWGSC/CCG publication *Quality Levels for Printing 1993*.

4 COLOUR REPRODUCTION QUALITY

Three levels of colour reproduction quality have been defined and in ascending order of quality are Informational Quality, Library Quality and Prestige Quality. These designations are used in addition to the Print Quality Levels if the publication contains colour illustrations. Depending on the particular level of colour quality selected, both the customer and supplier have specific quality assurance procedures to follow. The supplier's procedures are detailed in the PWGSC/CCG publication *Quality Levels for Colour Reproduction 1993*. It is important that all the procedures be followed as these are the only means of ensuring that the final printed results will meet expectations. The customer should note that the production time, cost and involvement increase considerably from the lower to higher quality levels.



4.1 Prestige Quality

At this quality level the customer can indicate for each colour original if *Exact Colour Reproduction* or *Preferred Colour Reproduction* is desired.

Exact Colour Reproduction shall be understood by the customer and supplier to mean that the final print must match the original as closely as possible. This requires that the customer supply originals which have the correct colour balance.

Preferred Colour Reproduction shall be understood by the customer and supplier to mean that the final print should deviate in a specified manner from the supplied original. In this case the customer must specify which colours or areas of each original are of primary concern and put these instructions in writing. The customer should realize that certain compromises must be made and should check with the Requirements Definition Group of CCG to see if the requested deviations are obtainable.

Pre-press colour proofs can only be used as a preliminary judgement to colour reproduction and must not be used as a printer's guide.

Progressive colour proofs supplied as single colour pulls and all four colours down must be produced by the supplier or the supplier's colour separation sub-contractor. All colour illustrations must then be fully approved by the customer prior to any production. The colour separations will be corrected and reproofed until this is achieved. *At the "Prestige Quality" level the supplier accepts full responsibility for matching the approved proof regardless of the method and equipment used to produce it.* In some cases, the proofs should be made in press imposition and this should be determined by consulting with the Requirements Definition Group of CCG and the supplier.

All proofs must be produced with the same inks and on the identical stock intended for the actual printing. Colour evaluation of proofs must be made with the illustrations in exact register and using standard 5000K illumination.

All process colour work will be controlled by the supplier so as to meet the specifications of the "Prestige Quality" level as listed in the PWGSC/CCG publication *Quality Levels for Colour Reproduction 1993*. All quality evaluations of the finished print will be made according to the specifications therein.

When an existing set of colour separations is to be used for a reprint or in multiple editions by other than the original supplier, a new set of progressive proofs must be pulled by the new supplier. If the colour reproduction on these proofs is unacceptable, the separations must be corrected and reproofed until approved by the customer. If the supplier chooses to use an existing set of separations, his commitment to matching the approved proof is the same as if he had produced the separations himself.

As the purchase of new colour separations or the correction of existing separations is costly, every attempt should be made to have multiple editions printed at the same time by the same supplier.

A set of progressive proofs with a record of the ink types and paper should be stored away from light if the job is intended to be reprinted.

4.2 Library Quality

All colour illustrations designated "Library Quality" will be produced at that quality. To aid the customer and supplier in determining a colour balance, pre-press proofs are required for customer approval prior to production. While this type of proof is useful in judging the reproduction quality of colour material, caution must be exercised as there is always a



difference between the pre-press proof and printed sheet. Only those pre-press proofing systems that use coloured or toned films permanently laminated on the substrate are acceptable.

The customer will not be present at the supplier's plant during make-ready. It is the supplier's responsibility to produce a colour match that is balanced as closely to the approved pre-press proofs.

All colour printing will be controlled by the supplier so as to meet the quality specifications of "Library Quality" as listed in the *Quality Levels for Colour Reproduction 1993*. All quality evaluations of the finished printed matter will be made according to the specifications therein.

When producing reprints or multiple editions of a publication by supplying the same colour separations to different suppliers (which is not recommended), an exact colour match cannot always be obtained, if the colour reproductions from one job to the next must be identical. In the case of reprints, a copy of the previously printed job should be supplied as a guide to the current supplier. The pre-press proofs should not be used again as long as there are printed sheets which the customer considers acceptable.

4.3 Informational Quality

All colour illustrations designated for "Informational Quality" will be produced as "Pleasing Colour" reproductions. This shall be understood by the customer and supplier to mean that the final print will be produced to within average commercial tolerances and will be satisfactory to the average viewer, though not necessarily identical to the original.

At this quality level, pre-press colour proofs are required for customer approval. The responsibility for obtaining an acceptable colour reproduction rests with the supplier.

All colour printing will be controlled by the supplier so as to meet the quality specifications of "Informational Quality" as listed in the *Quality Levels for Colour Reproduction 1993*. All quality evaluations of the finished printed matter will be made by CCG according to the specifications therein.

When producing reprints or multiple editions of a publication the same colour separation films may be used by different suppliers. To ensure the best possible colour match a sample of the previously printed job should be supplied, as a guide, to the current supplier. Some differences in colour reproduction may result. However, this must be accepted as a possibility with "Pleasing Colour" reproduction and the "Informational Quality" level.

5 GUIDE TO BOOKBINDING REQUIREMENTS

Once the printed sheet is forwarded to the bindery department of a printing plant, the final processing of the book commences. The flat sheets are folded into sections or signatures; the page count for each signature must be in multiples of four. Then the signatures are gathered in sequence and attached to a cover. The method of binding is dependent on the number of pages and thickness of paper. As a rule the saddle-stitched book should not exceed a quarter-inch or 6.35 mm in thickness. Beyond that, a book should be adhesive bound or signature sewn. In order to ensure efficient production in a most economical manner, the adhesive bound book should be at least three-sixteenths of an inch or 4.76 mm in thickness.



Guide to the Categories of Binding

Category	Method of Construction	Typical of Category
Sewn Binding	Case Hard Cover	Deluxe Bound Books Text Books Library Books Limited Editions
	Soft Flexible Cover	Statistical Reference Books Scientific and Technical Journals Catalogues Library Books Text Books
Adhesive Binding	Case Hard Cover	Statistical Reference Books Deluxe Catalogues Scientific and Technical Journals Library Books
	Soft Flexible Cover	Scientific and Technical Journals Periodicals Catalogues Reference Books Pocket Books Annual Reports
Saddle Gluing	Self Cover Maximum 32 Pages	Catalogues Periodicals
Saddle Wired	Soft Flexible Self Cover	Annual Reports Operational Reports Office Documents Informational Documents
Side Wired		
Ring or Post	Ring or Post Binder	Catalogues Service Manuals Procedural Documents Operational Instructions All documents requiring continual update

6

EXPLANATION OF TYPES OF BOOKBINDING

6.1 Types of Binding

There are three basic classifications of binding covered in this section:

- SEWN BINDING
- ADHESIVE BINDING
- MECHANICAL BINDING



Sewn Binding is "Signature Sewing" where threads are stitched through the folded signature, at the gutter fold, and interlocked with the other signature threads at the spine to join a number of signatures together.

This type of binding is expected to offer the highest degree of performance reliability and is used extensively for text books and library books where continual use and longevity are required.

There are two methods of covering books using Sewn Binding:

- 1-SEWN BINDING, Case Hard Cover
- 2-SEWN BINDING, Soft Flexible Cover

Adhesive Binding is the gluing of multiple pages or slot perforated signatures at the spine as a method of holding them together in book form. Adhesive Binding is sometimes referred to as "Perfect Binding".

There are three methods of covering books using Adhesive Binding:

- 1-ADHESIVE BINDING, Case Hard Cover
- 2-ADHESIVE BINDING, Soft Flexible Cover
- 3-SADDLE GLUING, Soft Flexible Self Cover (maximum 12 pages)

Mechanical Binding is:

- (a) the Saddle or Side stitching with wire along the fold of the signature or binding side of the sheet, to hold a number of single pages or signatures together. Covers are soft, either of the same paper as the inside pages (self cover) or they can be of a special cover stock;
- (b) the drilling or punching of holes or slots along the binding edge of the page to accommodate rings, or posts. Covers are normally premanufactured binders or special material.

There are three methods of Mechanical Binding:

- 1-SADDLE WIRED, Soft Flexible Cover
- 2-SIDE WIRED, Soft Flexible Cover
- 3-RING or POST BINDING, Hard Cover or Soft Flexible Cover