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Graphic technology — Vocabulary —

Part 3: Printing terms

Technologie graphique — Vocabulaire —

Partie 3: Termes d'impression

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Foreword

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ISO 12637-3 was prepared by Technical Committee ISO/TC 130, *Graphic technology*.

This first edition cancels and replaces ISO 12637-5:2001, of which the terms and definitions have been incorporated.

ISO 12637 consists of the following parts, under the general title *Graphic technology — Vocabulary*:

— *Part 1: Fundamental terms*

— *Part 2: Prepress terms*

— *Part 3: Printing terms*

— *Part 4: Postpress terms*

Introduction

Documentation gives rise to numerous international exchanges of both intellectual and material nature. These exchanges often become difficult, either because of the great variety of terms used in various fields or languages to express the same concept, or because of the absence or the imprecision of useful concepts. To avoid misunderstandings due to this situation and to facilitate such exchanges, it is advisable to select terms to be used in various languages or in various countries to express the same concept and to establish definitions providing satisfactory equivalents for the various terms in different languages. The purpose of this part of ISO 12637 is to provide definitions that are rigorous, uncomplicated and which can be understood by all concerned.

This part of ISO 12637 contains terms and definitions of printing technology and addresses printing systems and processes.

Graphic technology — Vocabulary —

Part 3:
Printing terms

Scope

This part of ISO 12637 defines terms for printing systems and processes.

Terms and definitions

1
analogue copying machine
image-producing device that operates by transferring the original image via a lens onto a photosensitive substrate and creates a visual image by utilizing electrophotographic or other means

2
anilox cell
engraved, etched, ablated or otherwise created recession in the anilox roller to contain the ink to be transferred to the printing forme

3
anilox roller
cylinder with evenly distributed cells generally mounted on a flexographic printing press to transfer a controlled quantity of ink to the printing forme

4
anti-setoff powder
anti-setoff spray powder
particles sprayed onto a printed surface to prevent ink set-off

5
aperture size
aperture width
⟨screen printing⟩ distance between two adjacent warps or weft wires (strands, threads) measured in the projected fabric level

6
back printing
reverse printing
printing on the underside of a transparent film so that a readable image is visible on the top side

7
back-up cylinder
roll which holds down the small diameter impression cylinder to prevent bending

8
bearer
hardened steel ring mounted on both sides of the impression, blanket and plate cylinders which is the true pitch circle diameter of the gear cylinders

9
bias roller transfer
support for the rubber blanket that acts as the intermediate carrier of the original images from the forme to the substrate

10
blanket
〈offset printing〉 elastomeric image carrier that transfers original images from the printing forme to the substrate in offset printing

11
blanket cylinder
rolling rubber blanket in contact with the plate cylinder of an offset press which transfers the inked image to the substrate carried by the impression cylinder

12
blanket-to-blanket web offset printing
process in which sets of plate and blanket cylinders simultaneously print on both sides of the substrate with each blanket cylinder acting as the impression cylinder for the other

13
bleeding
〈ink〉 penetration or migration of substances from the ink film into or onto a substrate, during or after printing, causing an overlap of colours

14
blocking
condition that occurs when layers of printed substrates stick together

15
capsule toner
〈electrophotography〉 colorant carrier, designed for low temperature melting that is formed by a low melting, point resin with a hard shell

16
carrier
〈electrophotography〉 magnetic beads transporting toner particles to the photoconductor used in a multi-component dry electrophotographic developer

17
channel
⟨gravure printing⟩ area that links two adjacent cells in electromechanical engraving of pyramid-shaped cells in circumferential direction

18
charge transfer
⟨electrophotography⟩ process in which colorant particles are conveyed from the photoconductor to a substrate by corona treatment

19
charging roller
charge roller
⟨electrophotography⟩ roller that applies a static charge to the photoconductor prior to imaging

20
clogging
⟨flexo printing⟩ filling of the anilox cells with dried ink remains

21
clogging
⟨ink jet printing⟩ blockage of printer head

22
coating thickness
⟨screen printing⟩ difference between the screen-printing stencil thickness and thickness of mesh

23
conductive brush charging
⟨electrophotography⟩ process that uses electroconductive fibres tied together in brush form, the ends of which are then brought into contact with a photosensitive surface and charged with DC voltage

24
corona transfer
⟨electrophotography⟩ process of electrostatic charging of photoconductors and substrates by passing them under a thin, high voltage wire

25
crawling
insufficient wetting of the print substrate by the printing ink

26
creep
tendency of a printed image to drift out of register or position

27
cylinder press
printing press with a moving flat bed that holds the forme while a fixed rotating impression cylinder provides the pressure

28
dampening system
device that wets the printing forme prior to the inking rollers

29
deflection electrode
〈continuous ink jet printing〉 electrode that determines the trajectory direction of charged ink droplets

30
direct stencil
〈screen printing〉 stencil produced on the screen-printing carrier

31
direct-indirect stencil
〈screen printing〉 stencil with which the direct and the indirect production methods are combined

32
doctor blade
blade that wipes the excess (surface) ink from a gravure cylinder or anilox roller before printing or the excess coating from a cylinder during finishing operations

33
doctor roll
fountain roll in a flexographic press

34
dot area
percentage of the surface which appears to be covered by a single colour

35
double sheet detector
device on a sheet-fed press that can be set to automatically stop the feeding action when the sheet separation unit of a feeder picks up two or more sheets simultaneously

36
dry back
change in colour, gloss or density of an ink film as it dries and penetrates the substrate

37
dryer tunnel
compartment through which the substrate passes for final drying after printing

38
dye ink
ink containing a colorant in dissolved form

39
effective squeegee angle
⟨screen printing⟩ angle between the blade and the forme when pressure has been applied

40
feathering
spreading of particles from the ink film onto the substrate, creating an irregular larger image

41
fill in
plugging
undesired effect in which small non-image areas are filled by ink

42
flooding
flow coating
flood coating
flood pulling
⟨screen printing⟩ filling the openings of the screen-printing forme with printing ink before the printing process

43
flooding
flow coating
flood coating
flood pulling
⟨gravure printing⟩ condition where the ink volume is so great that the image of the individual cells is no longer visible

44
flooding
flow coating
flood coating
flood pulling
⟨offset printing used in lithography⟩ excess water on the printing plate or in the ink caused by improper ink and/or water balance

45
forme roller
ink or dampening roller that directly contacts the printing forme

46
fountain solution
dampening solution
mixture of water and chemical agents used to wet the lithographic forme

47
frame height
⟨screen-printing⟩ distance of the frame above the substrate for the correct screen release

48
gear mark
irregular density that appears at regular intervals as bands in half-tones and solids parallel to the gripper margin of the sheet

49
ghost image
undesirable, faint printed images appearing on substrates where they are not intended to be reproduced

50
grain
⟨plate⟩ roughened or irregular surface of a printing plate

51
gravure cell
engraved, etched, ablated or otherwise created recession in the gravure cylinder to contain the ink to be transferred to the substrate

52
gravure cylinder
printing forme with an engraved pattern used in the gravure process, directly resulting in the printing image after inking in a gravure press

53
half-tone gravure
printing process in which the ink-receptive cylinder cells are produced to vary in surface area and depth

54
halo
irregular outline that appears around printed characters and/or images, especially in relief forme printing, flexo and letter press printing

55
hickey
imperfection on a printed sheet caused by unwanted particles that cling to the image carriers during lithographic or letterpress printing

56
image area
part of the printing area on which ink is laid down

57
impression bar
small diameter rod or bar supported by another part of sufficient rigidity used in place of the impression cylinder for running delicate substrates

58
impression cylinder
device which presses the substrate against an inked image carrier transferring the original image to the substrate

59
indirect stencil
⟨screen printing⟩ stencil that, after its production, is attached to the screen-printing stencil carrier

60
ink-absorbing layer
coating layer on a substrate to provide a quality image without irregular bleeding

61
ink consumption
⟨screen printing⟩ wet volume of a certain printing ink required for printing with a certain printing forme

62
ink-ejecting heater
tiny heater plate located in the pressure chamber of the thermal ink jet printer head

63
ink fountain
pan on a printing press that holds the ink supply to be transferred to the inking system

64
ink rest
area on the upper surface of the screen-printing forme outside the printing area

65
ink trail
⟨screen printing⟩ area on the surface of the screen-printing forme outside the printing area

66
ink transfer
amount of ink supplied to a substrate as expressed in a percentage of the total ink available

67
in-line press
combination of modular printing and converting units

68
inner frame dimension
⟨screen printing⟩ inner length and width of the area enclosed by the screen-printing frame, excluding all parts firmly attached to the frame

69
keyless offset
inking mechanism of an offset press in which an ink metering roller is used instead of adjustment keys for controlling the ink flow

70
laser printer
⟨electrophotography⟩ digital electrophotographic printer using a laser to form the image

71
laser thermal transfer
printing process employing a high-energy laser beam to transfer colorant from transfer layer to a substrate with the use of physical and/or physicochemical phenomena such as sublimation

72
magnetic-brush developing device
⟨electrophotography⟩ device that transfers toner particles to charged areas of a photoconductor in dry toner systems and some of magnetographic printing systems

73
magnetic printer
printer in which a magnetic print head transfers an image to a magnetized drum that picks up toner with the opposite magnetic polarity and transfers it to the substrate to form the printed image when the drum is demagnetized

74
make-ready
preparation process and operations in which adjustments are made to the press to ensure a satisfactory printed image on the substrate

75
mass tone
colour of an ink in bulk which has sufficient thickness to hide the substrate colour such as ink in a can or thick-layered ink film

76
mesh count
⟨screen printing⟩ number of threads per unit length in a screen mesh

77
mesh elongation
⟨screen printing⟩ increase in length or width of the mesh due to applied force during the print operation

78
mesh tension
⟨screen printing⟩ tensile force with which the screen-printing stencil carrier strains the screen-printing frame

79
misting
undesirable mist or fog of tiny ink droplets released off the printing press during printing and idle rotation of the ink distribution rollers

80
mottle
cloudy or uneven appearance of printing, mostly in the solid areas

81
non-contact fusing
⟨electrophotography⟩ technique that uses heat transfer via radiation and/or convection to perform a heat fusing process without having the heat source directly contact the toner

82
off-contact distance
⟨screen printing⟩ distance between the lower side of the screen-printing forme and the printing substrate when ready to print

83
oil-less fusing
⟨electrophotography⟩ means to thermally fix a toner without using release oil in such a way to disperse the toner in a polypropylene or polyethylene wax which bleeds on the toner surface, producing a release effect upon being heated at the time of fusing

84
OK sheet
OK print
during production printing, the sheet singled out as a reference for the remaining production

NOTE Adapted from ISO 12647-1:2004, definition 3.26.

85
open mesh area percentage
⟨screen printing⟩ ratio of the total area of all mesh openings to the total screening surface area, expressed as a percentage

86
open stencil area
⟨screen printing⟩ sum of printing stencil area of all image elements to the printing stencil

87
orifice plate
metal plate containing tiny nozzles in a thermal ink jet printer head

88
outer frame dimension
〈screen printing〉 length and width of a screen-printing frame measured over all those parts belonging to the frame in the projected frame level

89
overprint
condition where one or more layers of colorant, usually ink, are printed on top of another

[ISO 13656:2000, definition 3.18]

90
packing
underlay material placed under the blanket to adjust the effective thickness of the blanket on press

[ISO 12636:1998, definition 2.8]

91
peeling time
total amount of time required from first heat application to the ink ribbon until release of the ribbon from the ink with carrying material in the thermal transfer process

92
permanent head
mechanical or electrical part of a printer that generates ink droplets continuously and/or intermittently

93
pick
rupture of the surface of a paper or board during printing which occurs when an external tensile force is applied to the surface

NOTE 1 In the case of coated papers, the rupture can take the form of particles of coating or fibres wholly or partly detached from the sheet, blistering of the surface or gross stripping. In the case of uncoated papers, the rupture normally takes the form of the removal of fibre aggregates and is difficult to determine due to the paper surface structure, since the visual assessment is easily influenced by human factors.

NOTE 2 Adapted from ISO 3783:2006, definition 3.1.

94
piezo ink jet system
drop-on-demand ink jet printing process whereby droplets are ejected from tiny ink chambers by physical deformation of the ink chamber wall

95
piling
build-up of debris such as paper, dust, ink and so forth on the offset blanket and/or plate to a degree which impairs print quality

96
plate cylinder
supporting device which carries the printing forme

97
pressure fixing
⟨electrophotography⟩ method of fixing the toner image atop a paper substrate by passing the substrate between rollers whereto pressure is applied

NOTE The pressure is generally between 20 kg/cm to 40 kg/cm, and the toner is made with materials whose viscosity decreases when pressure is applied.

98
printing area
length and width of area in common to the image carrier and substrate available to the printed image

99
printing side
⟨screen printing⟩ side of the screen-printing forme from which the printing ink is applied to the substrate

100
radiant fusing
⟨electrophotography⟩ means of toner fusing based on heat injection by a quartz lamp with a 2 500 K filament

101
relative mesh elongation
⟨screen printing⟩ mesh extension divided by the original mesh length

102
relative screen volume
⟨screen printing⟩ total volume enclosed by the mesh and the thickness of the stencil divided by the total surface of the mesh

103
release layer
layer that assists the release process in the ink layer formed between the thermal ink ribbon holder and the thermal ink layer

104
roller stripping
failure of ink to adhere to the inking roller

105
rotary screen printing
⟨screen printing⟩ screen-printing procedure in a cylindrical form

NOTE Since the rotary forme rotates synchronously with the substrate, a seamless pattern can be printed.

106
screen
⟨screen printing⟩ carrier with regular openings of the same size

107
screen-printing forme
⟨screen printing⟩ image carrier used in screen printing

108
screen-printing frame
⟨screen printing⟩ device that holds and fixes the screen-printing stencil carrier

109
screen-printing stencil
⟨screen printing⟩ blocking layer on or in the screen-printing stencil carrier making the screen impermeable in the non-image areas

NOTE Together, the screen-printing stencil and the screen-printing stencil carrier constitute the screen-printing forme and can be manufactured from the same material.

110
screen-printing stencil carrier
⟨screen printing⟩ part of the printing forme where the stencil is mounted

NOTE Together, the screen-printing stencil carrier and the screen-printing stencil constitute the screen-printing forme and can be manufactured from the same material.

111
scumming
undesirable inking on non-image areas on the offset forme caused by sensitization of the non-image area during the printing process

112
set-off
condition that results when wet ink from a printed sheet is transferred to the back of the following sheet

113
sheet-fed press
printing machine that prints on substrates in sheet form

114
slur
printing defect appearing as loss of sharpness in the printed image as a result of directional deformation of the image element

115
snap-off
⟨screen printing⟩ release of the screen-printing forme from the printing ink applied to the printing material during the printing process

116
soft roll fuser
type of thermal roll process where the surface of the roller coated with a thin layer of heat-resistant material envelops the toner in such a way to produce a fixed image of uniform gloss and limited expansion when the two rollers come into contact and are heated

117
solid ink jet system
phase-change printer that employs melted wax-based inks and a piezo electric ejection mechanism

118
squeegee
⟨screen printing⟩ device for simultaneously pressing the screen-printing forme against the substrate, forcing the printing ink through the openings of the forme on the substrate and scraping the excess ink from the forme, consisting e.g. of a holder and a blade or a roll coater (revolving doctor)

119
squeegee angle
⟨screen printing⟩ angle between the blade and the forme before pressure has been applied

120
squeegee blade
⟨screen printing⟩ part of the squeegee that forces the ink through the open areas of the forme onto the substrate

121
squeegeeing area
⟨screen printing⟩ width of the squeegee blade (contact area with forme)

122
squeegee pressure
⟨screen printing⟩ linear pressure with which the squeegee acts upon the forme along a given section per unit of length

123
squeegee side of screen
⟨screen printing⟩ side of the screen-printing forme on which the printing ink is laid

124
stencil area
⟨screen printing⟩ length times width of the rectangle oriented in the direction of the squeegee stroke enclosing the image elements of a screen-printing stencil

125
stencil carrier area
⟨screen printing⟩ mesh area length multiplied by width of the mesh area that can be stencilled

126
strike through
penetration of components of the printing ink through the substrate so that the ink is observed as an image on the opposite side

127
sublimation dye transfer printing method
method of printing in which every dot density varies to produce graduation and through the control of heating sublimates and transfers the ink onto the substrate

128
SUrface Rapid Fusing system
SURF system
⟨electrophotography⟩ fusion process that uses a thin film thermal-resistant endless belt to apply the un-fused toner to the image and then apply heat to fuse the toner with line-style heaters from behind

129
tack
adhesive quality of an ink

130
theoretical ink volume
⟨screen printing⟩ thickness of mesh and stencil multiplied by open screen volume

131
thermal belt fusing
⟨electrophotography⟩ fusion deposition process which allows reduced warm-up time by minimizing the required temperature with the use of a thin-layer heat-resistance belt to heat the toner layer

132
thermal dye transfer
thermal dye diffusion
process that transfers an image from a donor sheet to a receiving sheet by means of heat

133
thermal ink jet
ink jet printing process which employs thermal energy to eject ink droplets through nozzles

134
thermal transfer ribbon
ribbon using an exudation mechanism to transfer the image in which the ink layer contains thermofusible wax ink with fillers that control the ink transfer

135
thermofusible transfer
imaging method with the use of thermofusing ink which is solid at room temperature

136
thickness of mesh
⟨screen printing⟩ distance between upper and lower sides of the stencil carrier

137
thickness of the screen-printing forme
⟨screen printing⟩ distance between the upper and the lower sides of the screen-printing forme

138
tinting
undesirable colour cast on the non-image area of the substrate caused by contamination of the dampening solution or by emulsification of the ink

139
toner
colorant which consists of a polymer binder and pigment-charge agent and is used in magneto-electrophotographic and ion-deposition printing processes

140
tone-value increase
dot gain
difference between the dot area on the printed substrate and the dot area on the printing forme

141
toning
⟨offset printing⟩ undesirable inking on non-image areas on the plate

142
transfer cylinder
press device which conveys the substrate to be printed from one printing unit to another in a multi-printing unit press

143
transfer roller
electrically-charged roller which transfers a counter-charged toner from a photosensitive substrate onto a paper substrate by bringing it into contact with the opposite side

144
trapping
ink property that shows how well an ink film transfers to a freshly printed ink film

145
type of screen
⟨screen printing⟩ description of screen printing screens by giving mesh and wire and/or thread diameter (bridge width)

146
undertone
minor colour cast in the colour of a thin film of ink as a result of incomplete absorption of the light which is reflected from the substrate

147
web-fed press
press in which a substrate passes through the printing unit or units in a continuous form, as fed from a roll

148
width of ink rest area
⟨screen printing⟩ distance between the squeegee area and the screen printing frame

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