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Photography — 110-size cartridges — Location and dimensions of film exposure and film identification notches

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Photographie — Chargeurs de format 110 — Emplacement et dimensions des encoches d'exposition et d'identification du film
(standards.iteh.ai)

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International Standard ISO 7330 was prepared by Technical Committee ISO/TC 42, *Photography*.

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Photography — 110-size cartridges — Location and dimensions of film exposure and film identification notches

0 Introduction

Integral elements of 110-size cartridges include two sets of notches.

The first set of notches, film exposure notches, enables the cartridge manufacturer to incorporate the specific notch which corresponds to the exposure which should be used for a particular film in the cartridge. This notch automatically presets some cameras to this exposure setting. The exposure may be different from that specified for the film under the lighting conditions used. For example, film with an ISO speed of 100 may be notched for ISO 64 for use in fixed-exposure cameras to take advantage of the film's overexposure latitude.

The second set of notches are film identification notches. One or more of these notches in combination represent a notch combination code number. Code numbers are listed in table 4 and may be used by the cartridge manufacturer to provide a means for film processors to identify the film. Assignment of such a code number to a specific film product is made at the request of the film manufacturer.

Neither the assignment nor incorporation of film identification notches for particular film products is required by this International Standard. However, the procedure to be followed by film manufacturers in obtaining code numbers is given in annex A. The registration function is performed, under authorization from ISO, by the National Association of Photographic Manufacturers, whose address is :

National Association of Photographic Manufacturers, Inc.
600 Mamaroneck Avenue
Harrison
NEW YORK 10528
USA

1 Scope and field of application

This International Standard specifies the dimensions and locations of two sets of notches for 110-size cartridges :

- a) film exposure notches which preset certain cameras to an exposure setting;
- b) film identification notches which indicate by a code the name of the film and the number of exposures.

This product was designed in SI units, which are therefore prime, unless specifically noted to the contrary in this International Standard.

This International Standard is intended to be used in conjunction with ISO 7261 and ISO 7374 to completely specify 110-size cartridges.

2 References

ISO 1, *Standard reference temperature for industrial length measurements.*

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications.*

ISO 7261, *Photography — 110-size cartridges — Dimensions.*

ISO 7374, *Photography — 110-size cartridges — Dimensions and format of film and backing paper.*

3 Datum referencing

3.1 Principle

The principle of datum referencing is used to relate the cartridge to a set of three mutually perpendicular datum planes in contact with the cartridge surfaces which engage mating camera parts so as to ensure proper alignment of the cartridge in the camera.

3.2 Primary datum, S

The S plane or seating datum plane is the plane of a simulated camera aperture frame and is contacted by the four "A" pads of the cartridge. (See figures 1 and 2.)

3.3 Secondary datum, R

The R plane or rail datum plane is perpendicular to the S plane and is contacted by the two "B" pads located on the film identification rail. (See figures 1 and 2.)

3.4 Tertiary datum, T

The T plane or take-up datum plane is mutually perpendicular to the S and R planes and is contacted by the T-plane rib moulded into the cartridge take-up chamber near the gear cover. (See figures 1 and 2.)

4 Notching dimensions

4.1 Dimensions apply at the time of manufacture to an assembled cartridge at standard atmospheric conditions of 23 ± 2 °C and (50 ± 5) % relative humidity as specified in ISO 554.¹⁾

4.2 The dimensions shall be as given in figures 2 and 3 and tables 1, 2, 3 and 4.

4.3 Film exposure notches

The location of film exposure notches in 110-size cartridges is mandatory. Their location shall be as given in figure 2 and table 1.

4.4 Film identification notches

4.4.1 The use of film identification notches is optional. If used, their dimensions shall be as given in figure 3 and tables 2 and 3. They are measured from datum T, which is intended to serve as a rapid means of positioning the cartridge in a fixed

location with respect to the devices which will detect the film identification notches. The assignment of the film identification notches to the particular film products is not within the scope of this International Standard. However, the code system is described and the method which the National Association of Photographic Manufacturers will use is indicated (see annex A).

4.4.2 The notch dimensions apply to all film identification notch locations.

4.4.3 The dimensions for film identification notches have been established in a manner which permits the forming of two or more adjacent notches with or without a partition between them. When a partition is left between adjacent notches, its minimum width intentionally is not restricted by the dimensions shown in figure 3, but attention is called to the fact that any partition should be of sufficient width to withstand normal handling without breaking.

4.4.4 The film identification notch locations are numbered 1 through 8 from datum T for convenience in assigning combinations of notches.

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1) All measuring instrument calibrations are referred to a temperature of 20 °C (as specified in ISO 1) and a relative humidity of 50 %.

- S Seating datum plane (contacted by four "A" pads)
- R Rail datum plane (perpendicular to -S- and contacted by two "B" pads on film identification rail)
- T Take-up datum plane (perpendicular to -S- and -R- and contacted by T-plane rib)

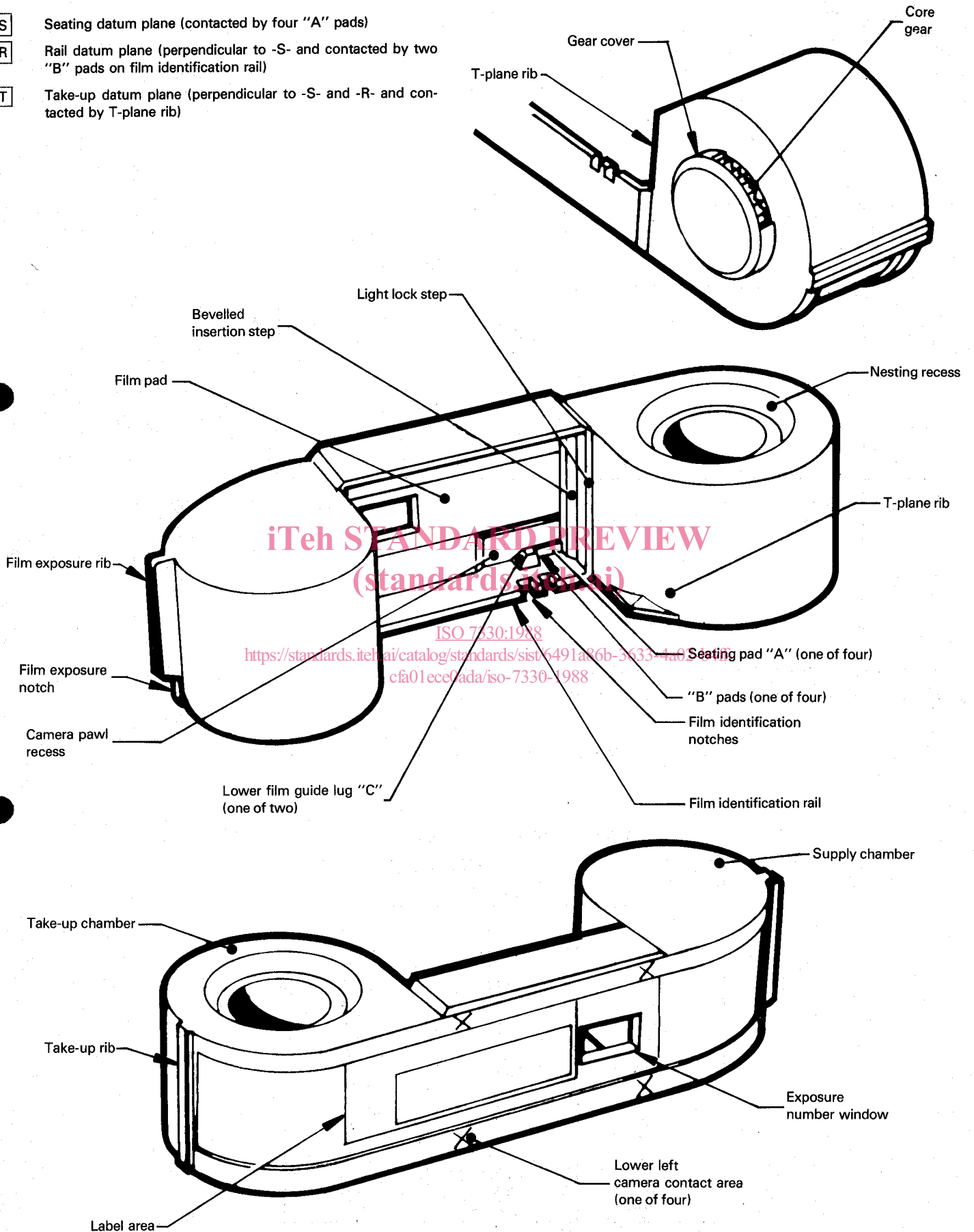
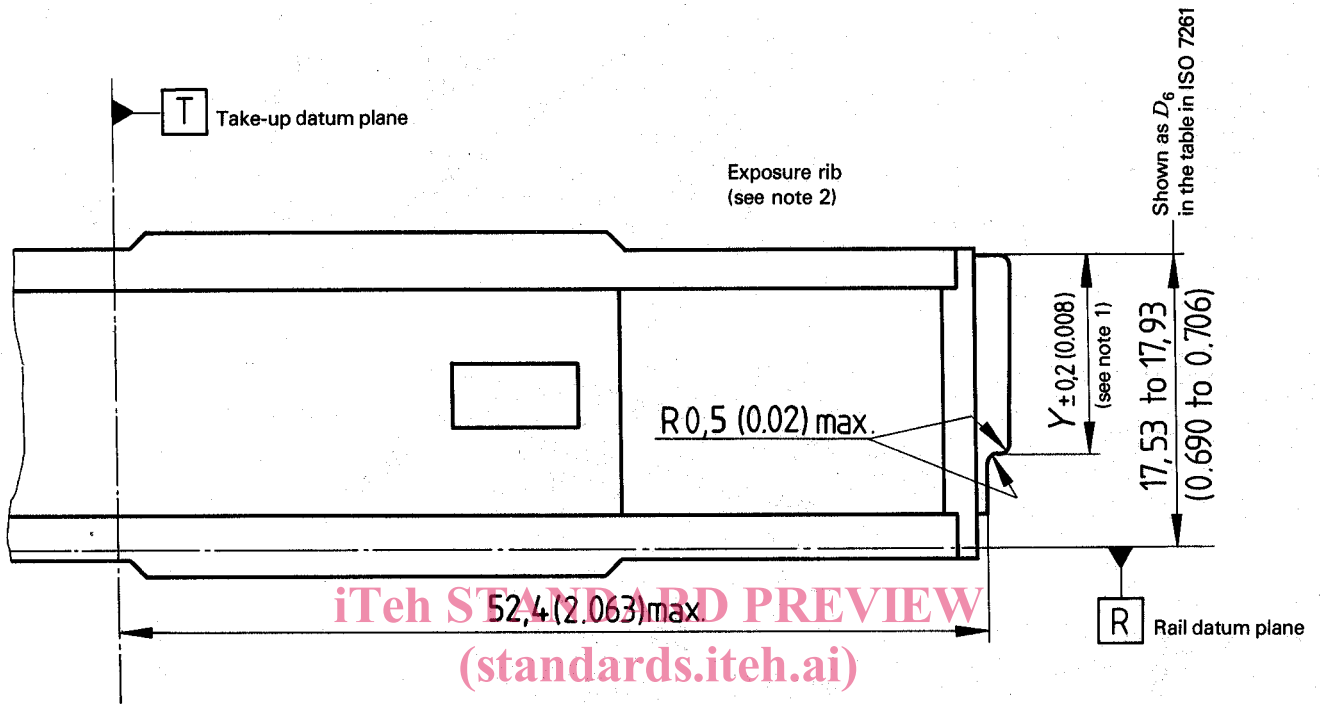


Figure 1 — 110-size cartridge nomenclature

Dimensions in millimetres
(Inch values in parentheses)



NOTES

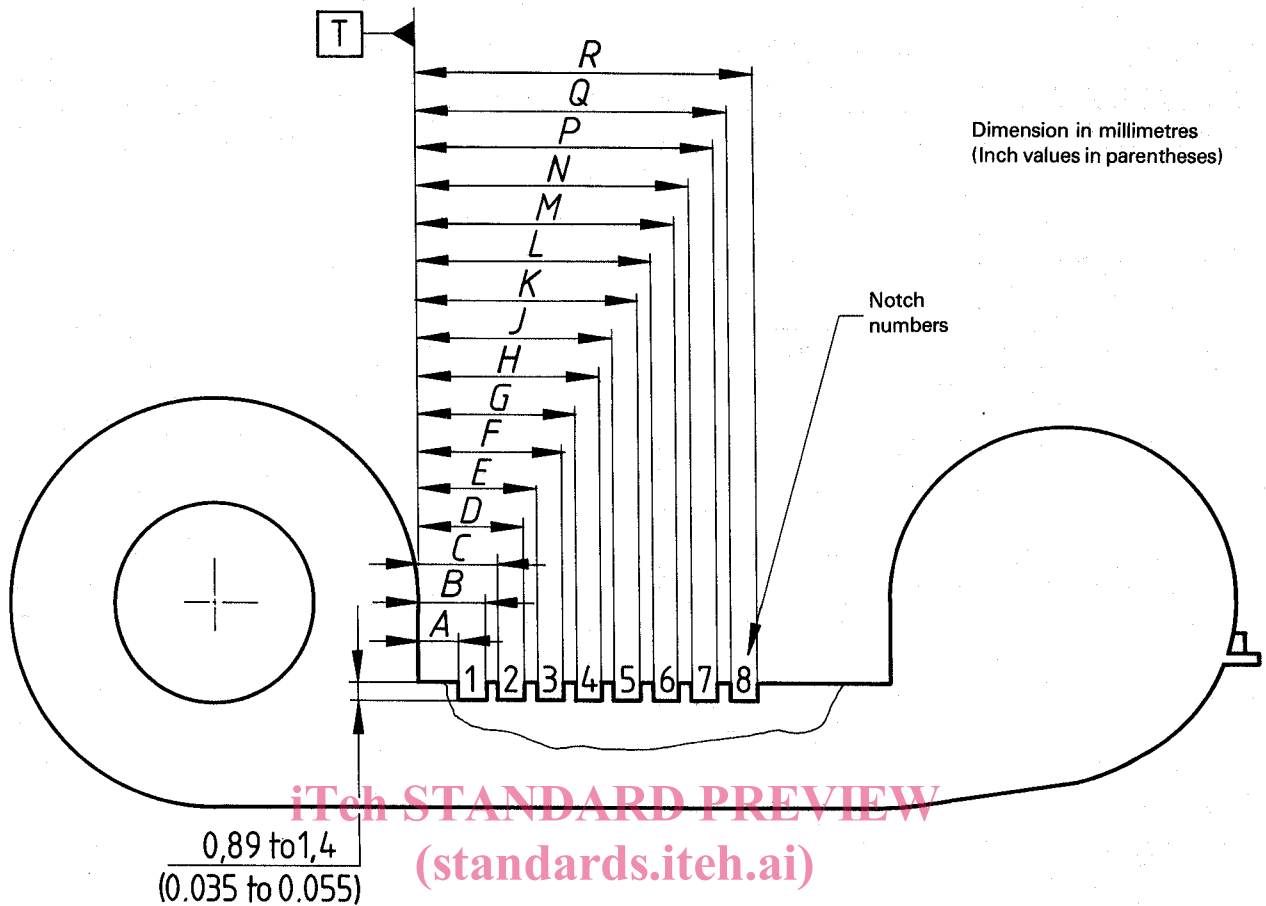
- 1 Notching may produce 0,12 mm (0.005 in) maximum burr (in excess of dimensions shown).
- 2 For location of film exposure rib on cartridge, see ISO 7261.

Figure 2 — 110-size cartridge — Film exposure notching

Table 1 — Film exposure notches

ISO speed	Rib dimension "Y"	
	mm	in
64	15,33	0.604
80	14,53	0.572
100	13,73	0.541
125	12,93	0.509
160	12,13	0.478
200	11,33	0.446
250	10,53	0.415
320	9,73	0.383
400	8,93	0.352
500	8,13	0.320
640	7,33	0.289
800	6,53	0.257
1 000	5,73	0.226
1 200	4,93	0.194
1 600	4,13	0.163
2 000	3,33	0.131
2 500	2,53	0.100
3 200*	—	—

* Rib completely removed.



NOTES

- 1 Notched rail is adjacent to the cartridge windup gear.
- 2 Presence of notch 1 indicates 20 exposures.
Presence of notch 8 indicates 12 exposures.
Absence of notches 1 and 8 indicates other than 20 or 12 exposures. Refer to cartridge label (used for 24 exposures).
- 3 See table 4 for listing of film identification notch codes.
- 4 See ISO 7261 for cartridge exterior dimensions.

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Figure 3 — 110-size cartridge — Film identification notching

Table 2 — Film identification notches

Dimension	Millimetres		Inches	
	min.	max.	min.	max.
A	2,54	3,18	0.100	0.125
B	4,45	5,08	0.175	0.200
C	5,08	5,72	0.200	0.225
D	6,98	7,62	0.275	0.300
E	7,62	8,26	0.300	0.325
F	9,52	10,16	0.375	0.400
G	10,16	10,80	0.400	0.425
H	12,06	12,70	0.475	0.500
J	12,70	13,34	0.500	0.525
K	14,60	15,24	0.575	0.600
L	15,24	15,88	0.600	0.625
M	17,14	17,78	0.675	0.700
N	17,78	18,42	0.700	0.725
P	19,68	20,32	0.775	0.800
Q	20,32	20,96	0.800	0.825
R	22,22	22,86	0.875	0.900

Table 3 — Centreline of film identification notches

Film notch number	Nominal centreline	
	mm	in
1	3,81	0.150
2	6,35	0.250
3	8,89	0.350
4	11,43	0.450
5	13,97	0.550
6	16,51	0.650
7	19,05	0.750
8	21,59	0.850

NOTE — Notching may produce 0,12 mm (0.005 in) in maximum burr (in excess of dimensions shown).

Table 4 — Film identification notch combinations¹⁾

Notch combination code number	Notch location number
	234567
1 ²⁾	2
2	3
3	4
4	5
5	6
6	7
7	23
8	34
9	45
10	56
11	67
12	2 4
13	3 5
14	4 6
15	5 7
16	2 5
17	3 6
18	4 7
19	2 6
20	3 7
21	2 7
22	234
23	345
24	456
25	567
26	23 5
27	34 6
28	45 7
29	23 6
30	34 7
31	23 7

Notch combination code number	Notch location number
	234567
32	2 45
33	3 56
34	4 67
35	2 4 6
36	3 5 7
37	2 4 7
38	2 56
39	3 67
40	2 5 7
41	2 67
42	2345
43	3456
44	4567
45	234 6
46	345 7
47	234 7
48	23 56
49	34 67
50	23 5 7
51	23 67
52	2 456
53	3 567
54	2 45 7
55	2 4 67
56	2 567
57	23456
58	34567
59	2345 7
60	234 67
61	23 567
62	2 4567
63	234567

1) See figure 3 for notching dimensions.

2) Code number 1 is available for use, without registration, to identify general purpose black-and-white negative films which can be processed satisfactorily in a universal process.

Annex A

Assignment of film identification notch combination code numbers

(For information only)

A.1 Category

Upon authorization by ISO, film identification notch combination code numbers as listed in table 4 (hereafter referred to as code numbers) are assigned by the National Association of Photographic Manufacturers, Inc., to two categories of film products :

- a) Category 1 — Specifically named products currently being marketed.
- b) Category 2 — Unnamed, prototype products scheduled for marketing within the succeeding 2-year period.

A.2 Assignment

A.2.1 A code number assignment is made to an individual product upon receipt of written application from its manufacturer. The application should include the following details :

- a) name and mailing address of manufacturer;
- b) category of the product (as defined in A.1) for which assignment is requested;
- c) trade name of the marketed product (category 1) or identification of the prototype product (category 2);
- d) any specific code number desired, and acceptable alternative;
- e) printed name and signature of applicant;
- f) date the application is signed.

A.2.2 When the application is received, the code number requested, if available and other than code number 1, will be assigned. Otherwise the acceptable alternative code, then the next available code number, will be assigned.

A.2.3 An assignment becomes effective at 12:00 h on the date of the letter of confirmation from the secretariat of the NAPM to the manufacturer.

A.3 Termination

An assignment automatically expires 24 months after its initial assignment at 12:00 h on the appropriate anniversary date but may, under the conditions specified in A.4.1, be renewed and may, under the conditions specified in A.4.2, be transferred and subsequently renewed.

A.4 Renewal

A.4.1 An assignment made to a category 1 product will be renewed for a period of 24 months on successive anniversary dates and the manufacturer so notified, provided that the National Association of Photographic Manufacturers has received from the manufacturer of the product within the 30-day period preceding each such expiration date written notification that renewal is desired, that the product remains a category 1 product and that it is expected to remain so during the following 24 months.

A.4.2 An assignment made initially to a category 2 product will be transferred to a specified category 1 product, effective as of the date of notification of a change in the product's status, and may therefore be renewed as specified above provided that the National Association of Photographic Manufacturers receives from the manufacturer of the product within the 24-month period preceding the expiration date of the initial registration a written request for the transfer, the trade name of the product, and assurance that the product has become a category 1 product and that it is expected to remain so during the following 24 months.