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INTERNATIONAL UNION FOR THE PROTECTION OF NEW VARIETIES OF PLANTS
GENEVA

DRAFT**CARNATION**

UPOV Code: DIANT

Dianthus L.

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GUIDELINES**FOR THE CONDUCT OF TESTS****FOR DISTINCTNESS, UNIFORMITY AND STABILITY***prepared by experts from the Netherlands**to be considered by*

*the Technical Working Party for Ornamental Plants and Forest Trees
at its forty-third session, to be held in Cuernavaca, Morelos State, Mexico,
from September 20 to 24, 2010*

Alternative Names:*

<i>Botanical name</i>	<i>English</i>	<i>French</i>	<i>German</i>	<i>Spanish</i>
<i>Dianthus L.</i>	Carnation, Clove Pink, Pink, Sweet William Carnation	Oeillet	Nelke	Clavel

The purpose of these guidelines ("Test Guidelines") is to elaborate the principles contained in the General Introduction (document TG/1/3), and its associated TGP documents, into detailed practical guidance for the harmonized examination of distinctness, uniformity and stability (DUS) and, in particular, to identify appropriate characteristics for the examination of DUS and production of harmonized variety descriptions.

ASSOCIATED DOCUMENTS

These Test Guidelines should be read in conjunction with the General Introduction and its associated TGP documents.

* These names were correct at the time of the introduction of these Test Guidelines but may be revised or updated. [Readers are advised to consult the UPOV Code, which can be found on the UPOV Website (www.upov.int), for the latest information.]

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1. Subject of these Test Guidelines

These Test Guidelines apply to all varieties of *Dianthus* L.

2. Material Required

2.1 The competent authorities decide on the quantity and quality of the plant material required for testing the variety and when and where it is to be delivered. Applicants submitting material from a State other than that in which the testing takes place must ensure that all customs formalities and phytosanitary requirements are complied with.

2.2 The material is to be supplied in the form of rooted cuttings.

2.3 The minimum quantity of plant material, to be supplied by the applicant, should be:

36 rooted cuttings

2.4 The plant material supplied should be visibly healthy, not lacking in vigor, nor affected by any important pest or disease.

2.5 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. If it has been treated, full details of the treatment must be given.

3. Method of Examination

3.1 *Number of Growing Cycles*

The minimum duration of tests should normally be a single growing cycle.

3.2 *Testing Place*

Tests are normally conducted at one place. In the case of tests conducted at more than one place, guidance is provided in TGP/9 "Examining Distinctness".

3.3 *Conditions for Conducting the Examination*

3.3.1 The tests should be carried out under conditions ensuring satisfactory growth for the expression of the relevant characteristics of the variety and for the conduct of the examination.

3.3.2 In particular, it may be necessary for separate growing trials to be established for cut-flower types, garden types and pot types in order to ensure the satisfactory growth of varieties of those types.

3.3.3 **Observation of color by eye**

Because daylight varies, color determinations made against a color chart should be made either in a suitable cabinet providing artificial daylight or in the middle of the day in a room

without direct sunlight. The spectral distribution of the illuminant for artificial daylight should conform with the CIE Standard of Preferred Daylight D 6500 and should fall within the tolerances set out in the British Standard 950, Part I. These determinations should be made with the plant part placed against a white background. **The color chart and version used should be specified in the variety description.**

3.4 *Test Design*

3.4.1 Each test should be designed to result in a total of at least 36 plants.

3.4.2 The design of the tests should be such that plants or parts of plants may be removed for measurement or counting without prejudice to the observations which must be made up to the end of the growing cycle.

3.5 *Additional Tests*

Additional tests, for examining relevant characteristics, may be established.

4. Assessment of Distinctness, Uniformity and Stability

4.1 *Distinctness*

4.1.1 General Recommendations

It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding distinctness. However, the following points are provided for elaboration or emphasis in these Test Guidelines.

4.1.2 Consistent Differences

The differences observed between varieties may be so clear that more than one growing cycle is not necessary. In addition, in some circumstances, the influence of the environment is not such that more than a single growing cycle is required to provide assurance that the differences observed between varieties are sufficiently consistent. One means of ensuring that a difference in a characteristic, observed in a growing trial, is sufficiently consistent is to examine the characteristic in at least two independent growing cycles.

4.1.3 Clear Differences

Determining whether a difference between two varieties is clear depends on many factors, and should consider, in particular, the type of expression of the characteristic being examined, i.e. whether it is expressed in a qualitative, quantitative, or pseudo-qualitative manner. Therefore, it is important that users of these Test Guidelines are familiar with the recommendations contained in the General Introduction prior to making decisions regarding distinctness.

4.1.4 Number of Plants / Parts of Plants to be Examined

Unless otherwise indicated, all observations for the purposes of distinctness should be made on 10 plants or parts taken from each of 10 plants, disregarding any off-type plants.

4.1.5 Method of Observation

The recommended method of observing the characteristic for the purposes of distinctness is indicated by the following key in the second column of the Table of Characteristics (see document TGP/9 “Examining Distinctness”, Section 4 “Observation of characteristics”):

MG: single measurement of a group of plants or parts of plants

MS: measurement of a number of individual plants or parts of plants

VG: visual assessment by a single observation of a group of plants or parts of plants

VS: visual assessment by observation of individual plants or parts of plants

Type of observation: visual (V) or measurement (M)

“Visual” observation (V) is an observation made on the basis of the expert’s judgment. For the purposes of this document, “visual” observation refers to the sensory observations of the experts and, therefore, also includes smell, taste and touch. Visual observation includes observations where the expert uses reference points (e.g. diagrams, example varieties, side-by-side comparison) or non-linear charts (e.g. color charts). Measurement (M) is an objective observation against a calibrated, linear scale e.g. using a ruler, weighing scales, colorimeter, dates, counts, etc.

Type of record: for a group of plants (G) or for single, individual plants (S)

For the purposes of distinctness, observations may be recorded as a single record for a group of plants or parts of plants (G), or may be recorded as records for a number of single, individual plants or parts of plants (S). In most cases, “G” provides a single record per variety and it is not possible or necessary to apply statistical methods in a plant-by-plant analysis for the assessment of distinctness.”

In cases where more than one method of observing the characteristic is indicated in the Table of Characteristics (e.g. VG/MG), guidance on selecting an appropriate method is provided in document TGP/9, Section 4.2.

4.2 Uniformity

4.2.1 It is of particular importance for users of these Test Guidelines to consult the General Introduction prior to making decisions regarding uniformity. However, the following points are provided for elaboration or emphasis in these Test Guidelines:

4.2.2 For the assessment of uniformity, a population standard of 1% and an acceptance probability of at least 95 % should be applied. In the case of a sample size of 36 plants, 2 off-types are allowed.

4.3 *Stability*

4.3.1 In practice, it is not usual to perform tests of stability that produce results as certain as those of the testing of distinctness and uniformity. However, experience has demonstrated that, for many types of variety, when a variety has been shown to be uniform, it can also be considered to be stable.

4.3.2 Where appropriate, or in cases of doubt, stability may be tested, either by growing a further generation, or by testing a new plant stock to ensure that it exhibits the same characteristics as those shown by the previous material supplied

5. Grouping of Varieties and Organization of the Growing Trial

5.1 The selection of varieties of common knowledge to be grown in the trial with the candidate varieties and the way in which these varieties are divided into groups to facilitate the assessment of distinctness are aided by the use of grouping characteristics.

5.2 Grouping characteristics are those in which the documented states of expression, even where produced at different locations, can be used, either individually or in combination with other such characteristics: (a) to select varieties of common knowledge that can be excluded from the growing trial used for examination of distinctness; and (b) to organize the growing trial so that similar varieties are grouped together.

The following have been agreed as useful grouping characteristics:

- (a) Plant: cultural type
 - Type 1: one flower per stem
 - Type 2: spray
 - Type 3: pot carnation
 - Type 4: outdoor carnation

In varieties bred to be grown as spray carnation, the lateral flower heads or lateral shoots are not removed. In varieties bred to be grown as one flower per stem carnation, the lateral flower heads or lateral shoots (if existing) are removed at an early stage to leave just the terminal flower head.

Varieties bred to be grown as pot carnation do not need a cold treatment (period) to induce optimal flowering. Varieties bred to be grown as outdoor carnation, do need a cold treatment (period) to induce optimal flowering.

- (b) Flower: type (characteristic 35)

- (c) Flower: main color
- 1: white or near white
 - 2: green
 - 3: yellow
 - 4: orange
 - 5: pink
 - 6: pink purple
 - 7: red
 - 8: violet
 - 9: violet red
- (d) Petal: secondary color (macule and claw excluded) (characteristic 50)

5.4 Guidance for the use of grouping characteristics, in the process of examining distinctness, is provided through the General Introduction.

6. Introduction to the Table of Characteristics

6.1 Categories of Characteristics

6.1.1 Standard Test Guidelines Characteristics

Standard Test Guidelines characteristics are those which are approved by UPOV for examination of DUS and from which members of the Union can select those suitable for their particular circumstances.

6.1.2 Asterisked Characteristics

Asterisked characteristics (denoted by *) are those included in the Test Guidelines which are important for the international harmonization of variety descriptions and should always be examined for DUS and included in the variety description by all members of the Union, except when the state of expression of a preceding characteristic or regional environmental conditions render this inappropriate.

6.2 States of Expression and Corresponding Notes

6.2.1 States of expression are given for each characteristic to define the characteristic and to harmonize descriptions. Each state of expression is allocated a corresponding numerical note for ease of recording of data and for the production and exchange of the description.

6.2.2 In the case of qualitative and pseudo-qualitative characteristics (see Chapter 6.3), all relevant states of expression are presented in the characteristic. However, in the case of quantitative characteristics with 5 or more states, an abbreviated scale may be used to minimize the size of the Table of Characteristics. For example, in the case of a quantitative characteristic with 9 states, the presentation of states of expression in the Test Guidelines may be abbreviated as follows:

State	Note
small	3
medium	5
large	7

However, it should be noted that all of the following 9 states of expression exist to describe varieties and should be used as appropriate:

State	Note
very small	1
very small to small	2
small	3
small to medium	4
medium	5
medium to large	6
large	7
large to very large	8
very large	9

6.2.3 Further explanation of the presentation of states of expression and notes is provided in document TGP/7 “Development of Test Guidelines”.

6.3 *Types of Expression*

An explanation of the types of expression of characteristics (qualitative, quantitative and pseudo-qualitative) is provided in the General Introduction.

6.4 *Example Varieties*

Where appropriate, example varieties are provided to clarify the states of expression of each characteristic.

6.5 *Legend*

(*) Asterisked characteristic – see Chapter 6.1.2

QL Qualitative characteristic – see Chapter 6.3

QN Quantitative characteristic – see Chapter 6.3

PQ Pseudo-qualitative characteristic – see Chapter 6.3

MG, MS, VG, VS – see Chapter 4.1.5

(a)-(g) See Explanations on the Table of Characteristics in Chapter 8.1

(+) See Explanations on the Table of Characteristics in Chapter 8.2

7. Table of characteristics/Tableau des caractères/Merkmalstabelle/Tabla de caracteres

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
1.	Plant: height					
QN	(a) short					3
	medium					5
	tall					7
2.	Plant: laterals without flower buds or flowers					
QL	(a) absent					1
	present				Martina (type 2)	9
3.	Plant: number of internodes between epicalyx and lowest node with laterals with flower buds or flowers					
QL	(a) one				Whatfield Can Can (type 4)	1
	two				Calypso Star (type 4)	2
	three				Devon Wizard (type 4)	3
	four				Scarlet Queen (type 2)	4
	more than four				Martina (type 2)	5
4.	Plant: laterals flower buds or flowers of second order					
QN	(a) absent or very few					1
	few					3
	medium					5
	many					7

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielsorten/ Variedades ejemplo	Note/ Nota
5.	<u>Varieties with laterals with flower buds or flowers only: Plant: arrangement of totality of flowers</u>					
(+)						
PQ	(a)	horizontal				1
		domed			Martina (type 2)	2
		cylindrical			Optima (type 2)	3
6.	<u>Plant: arrangement of individual flowers, top flower excluded</u>					
(+)						
QL	(a)	one-flowered			White Prestige (type 2)	1
		clustered				2
		one-flowered and clustered			Martina (type 2)	3
7.	<u>Main stem: length of internode</u>					
(*)						
QN	(b)	short			Devon Wizard (type 4)	3
		medium			Aveiro (type 2)	5
		long			Sinai (type 1)	7
8.	<u>Stem: thickness of internode</u>					
QN	(c)	very thin				1
		thin			Devon Glow (type 4)	3
		medium			White Prestige (type 2)	5
		thick			Goblin (type 1)	7
		very thick				9
9.	<u>Stem: cross section</u>					
QL		circular				1
		edged			Martina (type 2)	2

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
10.	Stem: hollowness					
QL	absent				Martina (type 2)	1
	present					9
11. (* (+)	Leaf: shape					
PQ	(d) ovate					1
	linear					2
	elliptic				Martina (type 2)	3
	obovate				Shooting Star (type 4)	4
12. (*	Leaf: length					
QN	(d) short				Shooting Star (type 4)	3
	medium				Martina (type 2)	5
	long				Don Pedro (type 1)	7
13. (*	Leaf: width					
QN	(d) narrow				Aveiro (type 2)	3
	medium				Grand Slam (type 1)	5
	broad					7
14. (* (+)	Leaf: longitudinal axis					
PQ	(d) straight				Devon Wizard (type 4)	1
	weakly recurved				Shooting Star (type 4)	2
	moderately recurved				Martina (type 2)	3
	strongly recurved				Prado Pino (type 1)	4
	rolled				Raspberry Ripple (type 2)	5

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
15.	Leaf: cross section (upper side)					
(+)						
PQ	(d) straight					1
	weakly concave				Martina (type 2)	2
	moderately concave				Kiro (type 1)	3
	strongly concave					4
16.	Leaf: color					
PQ	(d) yellow green					1
	green					2
	blue green				Martina (type 2)	3
17.	Leaf: waxy layer					
QN	(d) absent or very weak					1
	weak				Farida (type 1)	3
	medium				Grand Slam (type 1)	5
	strong				White Prestige (type 2)	7
	very strong					9
18.	Leaf: spiny ciliation of margin					
(+)						
QL	(d) absent				Martina (type 2)	1
	present				Whatfield Can Can (type 4)	9
19.	Bud: shape					
(*)						
(+)						
PQ	(e) globose					1
	cylindrical				Kiro (type 1)	2
	ovoid					3
	ellipsoid					4
	obovoid				Martina (type 2)	5

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
20.	Bud: extrusion of styles					
(+)						
QL	(e) absent				Martina (type 2)	1
	present					9
21.	Flower: diameter					
(*)						
QN	very small					1
	small				Shooting Star (type 4)	3
	medium				Devon Wizard (type 4)	5
	large				Farida (type 1)	7
	very large					9
22.	Epicalyx: position of outer lobes in relation to calyx					
QL	adpressed				Martina (type 2)	1
	free				Nirvana (type 2)	2
23.	Epicalyx: apex of outer lobes					
(*)						
(+)						
PQ	acute				Martina (type 2)	1
	acute to acuminate					2
	acuminate				Kiro (type 1)	3
24.	Epicalyx: length of apex of outer lobes					
(+)						
QN	short				Martina (type 2)	3
	medium				Devon Glow (type 4)	5
	long					7

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
25. (*) (+)	Epicalyx: apex of inner lobes					
PQ	acute				Martina (type 2)	1
	acute to acuminate					2
	acuminate				Kiro (type 1)	3
26. (+)	Epicalyx: length of apex of inner lobes					
QN	short				Martina (type 2)	3
	medium					5
	long					7
27.	Calyx: length					
QN	short				Whatfield Can Can (type 4)	3
	medium				Martina (type 2)	5
	long					7
28. (*) (+)	Calyx: shape					
PQ	funnel-shaped				Kiro (type 1)	1
	cylindrical				Martina (type 2)	2
	campanulate				Gaudina (type 1)	3
29. (+)	Calyx: longitudinal axis of lobes (tip excluded)					
PQ	straight				Whatfield Can Can (type 4)	1
	concave				Martina (type 2)	2
	angled				Optima (type 2)	3
	convex				Gaudina (type 1)	4

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
30.	Calyx: anthocyanin coloration of lobes					
QL	absent				Martina (type 2)	1
	present				Aveiro (type 2)	9
31.	Calyx: position of anthocyanin coloration					
PQ	edge of lobe				Aveiro (type 2)	1
	whole lobe				Houndspool Cheryl (type 4)	2
	whole calyx				Calypso Star (type 4)	3
32.	Calyx: hue of anthocyanin coloration					
PQ	reddish				Aveiro (type 2)	1
	purplish				Shooting Star (type 4)	2
	blackish					3
33.	Calyx: shape of lobe					
(+)						
PQ	long acute				Aveiro (type 2)	1
	short acute				Kiro (type 1)	2
	short acuminate					3
34.	Calyx: length of lobe					
QN	short				Kiro (type 1)	3
	medium				Aveiro (type 2)	5
	long					7
35.	Flower: type					
(*)						
(+)						
QL	single				Calypso Star (type 4)	1
	double				Martina (type 2)	2

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
36. (*)	<u>Varieties with double flowers</u>					
	<u>only: Flower: number of petals</u>					
QN	few				Claudia (type 2)	3
	medium				Martina (type 2)	5
	many				Grand Slam (type 1)	7
37. (*) (+)	Corolla: height					
QN	low				Whatfield Can Can (type 4)	3
	medium				Farida (type 1)	5
	tall					7
38. (*) (+)	Corolla: profile of upper part					
PQ	concave				Night Star (type 4)	1
	flat				Shooting Star (type 4)	2
	flat convex				Kiro (type 1)	3
	convex				Martina (type 2)	4
39. (*) (+)	Corolla: profile of lower part					
PQ	concave				Martina (type 2)	1
	flat				Whatfield Can Can (type 4)	2
	flat convex				Night Star (type 4)	3
	convex					4

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
40.	Petal: predominant shape					
(+)						
QL	(f) type 1				Martina (type 2)	1
	type 2				Baltico (type 1)	2
	type 3				Grand Slam (type 1)	3
	type 4					4
	type 5					5
	type 6				Gaudina (type 1)	6
41.	Petal: surface of blade					
(+)						
PQ	(f) flat					1
	undulate				Calypso Star (type 4)	2
	folded					3
42.	Petal: incisions of margin					
QL	(f) absent					1
	present				Martina (type 2)	9
43.	Petal: type of incisions of margin					
(*)						
(+)						
PQ	(f) sinuate				Farida (type 1)	1
	crenate				Grand Slam (type 1)	2
	dentate					3
	serrate				White Prestige (type 2)	4
	crenate-dentate				Martina (type 2)	5

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
44.	Petal: depth of incisions of margin					
QN	(f) very shallow				Fleurette (type 2)	1
	shallow				Intermezzo (type 2)	3
	medium				Claudia (type 2)	5
	deep				Pop Star (type 4)	7
	very deep					9
45.	Petal: length					
QN	(f) short				Whatfield Can Can (type 4)	3
	medium				Candela (type 2)	5
	long				Gaudina (type 1)	7
46.	Petal: width					
QN	(f) narrow				Whatfield Can Can (type 4)	3
	medium				Kiro (type 1)	5
	broad					7
47.	Petal: number of colors of blade (claw and macule excluded)					
PQ	(f) one				White Prestige (type 2)	1
	two				Martina (type 2)	2
	three					3
	more than three					4

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
48. (*) (+)	<u>Varieties with more than one color only:</u> Petal: color pattern of blade (claw and macule excluded)					
PQ	(f) picotee					1
	edged				Raspberry Ripple (type 2)	2
	striated				Intermezzo (type 2)	3
	speckled				Candela (type 2)	4
	picotee-striated					5
	picotee-speckled				Romany (type 2)	6
	edged-striated					7
	edged-speckled				Night Star (type 4)	8
	picotee-striated-speckled				Martina (type 2)	9
	edged-striated-speckled				Calypso Star (type 4)	10
	striated-speckled					11
	shading off					12
	flushed					13
49. (*)	Petal: main color (macule and claw excluded)					
PQ	(f) RHS Colour Chart					
	(g) (indicate reference number)					

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
50.	Petal: secondary color (macule and claw excluded)					
PQ	(f) white or near white				Candela (type 2)	1
	(g) yellow					2
	orange					3
	pink				Intermezzo (type 2)	4
	red				Martina (type 2)	5
	pale purple					6
	purple				Spectro (type 2)	7
	violet					8
51.	Petal: macule					
(*)						
(+)						
QL	(f) absent				Martina (type 2)	1
	present				Devon Wizard (type 4)	9
52.	Petal: macule: main color					
PQ	(f) RHS Colour Chart (indicate reference number)					
53.	Ovary: shape					
(*)						
PQ	globose					1
	ellipsoid					2
	ovoid				White Prestige (type 2)	3
	obovoid				Farida (type 1)	4
	rhomboid				Martina (type 2)	5
	cylinder				Shooting Star (type 4)	6

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota	
54.	Ovary: main color of lower part						
PQ	whitish				White Prestige (type 2)	1	
	yellowish					2	
	green				Shooting Star (type 4)	3	
55.	Ovary: surface						
QL	smooth				Claudia (type 2)	1	
	ribbed				Martina (type 2)	2	
56.	Styles: number						
QL	only two				Claudia (type 2)	1	
	two and three				Aveiro (type 2)	2	
	only three					3	
	three and four				Kleos (type 1)	4	
	only four					5	
	two, three, four and five				Gaudina (type 1)	6	
	more than five					7	
57.	Style: length						
QN	short				Shooting Star (type 4)	3	
	medium				Aveiro (type 2)	5	
	long				Liberty (type 1)	7	
58.	Style: shoulder						
(+)							
QL	absent				Martina (type 2)	1	
	present				Aveiro (type 2)	9	

	English	français	deutsch	español	Example varieties/ Exemples/ Beispielssorten/ Variedades ejemplo	Note/ Nota
59. (*)	Stigma: color					
PQ	white or cream				Martina (type 2)	1
	yellow					2
	pink					3
	white with red flush				Aveiro (type 2)	4
	white with purple flush				Shooting Star (type 4)	5
	red				Grand Slam (type 1)	6
	pale purple					7
	purple					8

8. Explanations on the Table of Characteristics

8.1 *Explanations covering several characteristics*

Unless otherwise indicated below, all characteristics should be recorded at the time of full flowering.

Characteristics containing the following key in the second column of the Table of Characteristics should be examined as indicated below:

(a) Only to be observed in varieties bred to be grown as spray carnations, without disbudding.

(b) The main stem can be found by following the most direct line from top-flower to base. In varieties bred to be grown as spray and as one flower per stem carnation the total length of seven internodes directly below flower should be observed. In varieties bred to be grown as pot and outdoor carnation the total length of five internodes directly below flower should be observed.

This characteristic should only to be observed if at least seven internodes for spray and one flower per stem (pot and outdoor five internodes) are present.

(c) In varieties bred to be grown as spray and as one flower per stem carnation the thickness of fifth internode directly below flower should be observed. In varieties bred to be grown as pot and outdoor carnation the thickness of third internode directly below flower should be observed.

(d) In varieties bred to be grown as spray and as one flower per stem carnation to be observed on the fifth node directly below flower. In varieties bred to be grown as pot and outdoor carnation to be observed on the third node directly below flower.

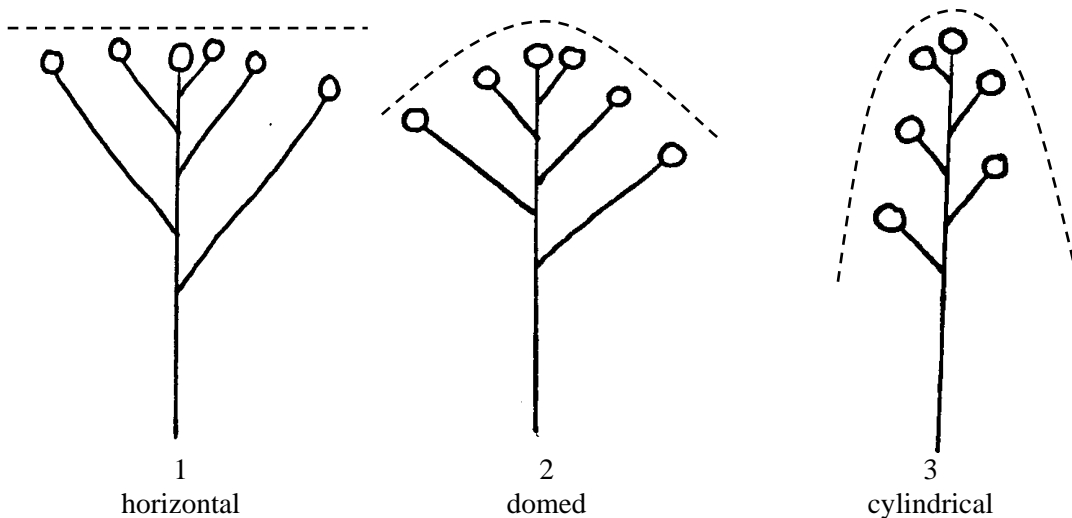
(e) To be observed immediately before color shows.

(f) To be observed on petals of the outer third row.

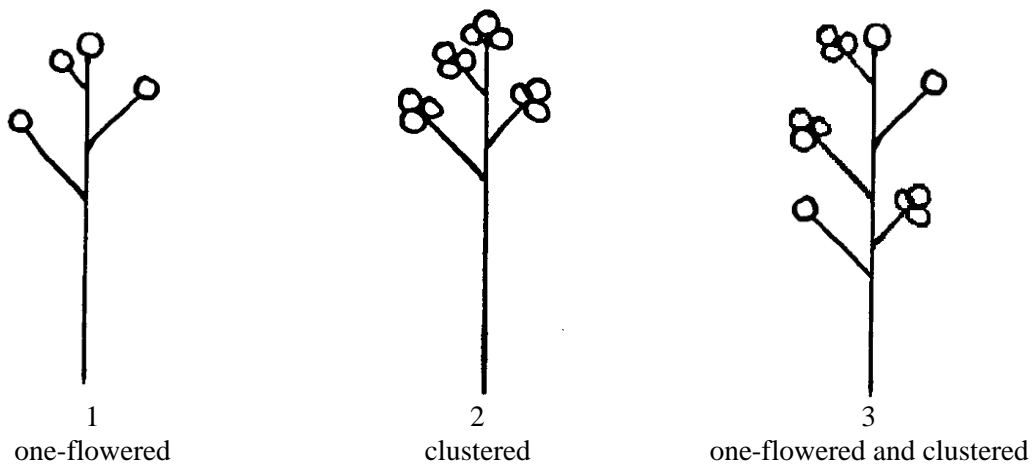
(g) The main color is the color with the largest total surface area, the secondary color (if present) is the color with the second largest total surface area. In case of when none of the colors is clearly predominant then the lightest color will be the main color.

8.2 Explanations for individual characteristics

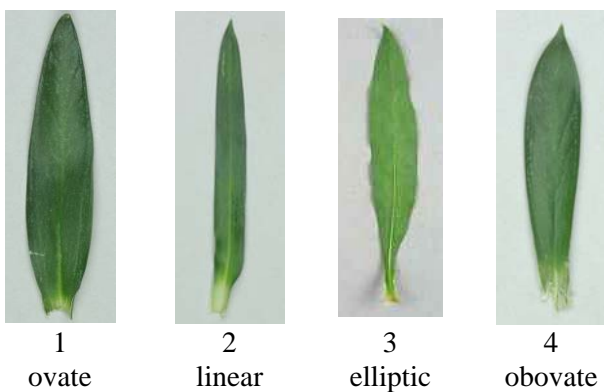
Ad. 5: Varieties with laterals with flower buds or flowers only: Stem: arrangements of totality of flowers



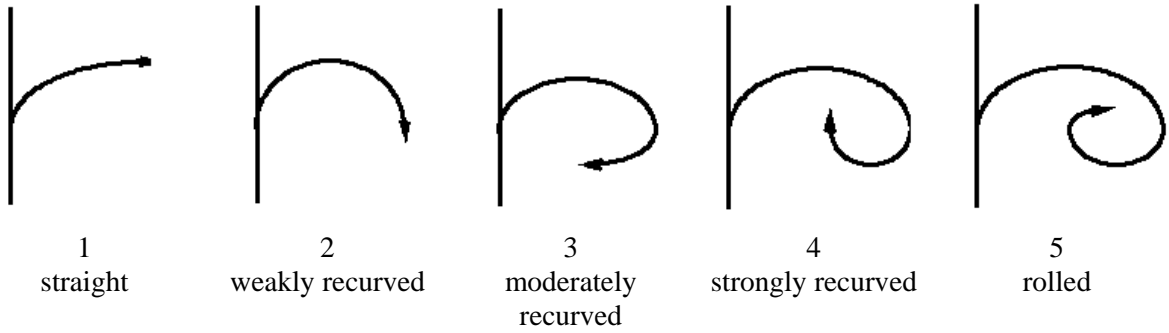
Ad. 6: Plant: arrangement of individual flowers (non disbudded plants, top flower excluded)



Ad. 11: Leaf: shape



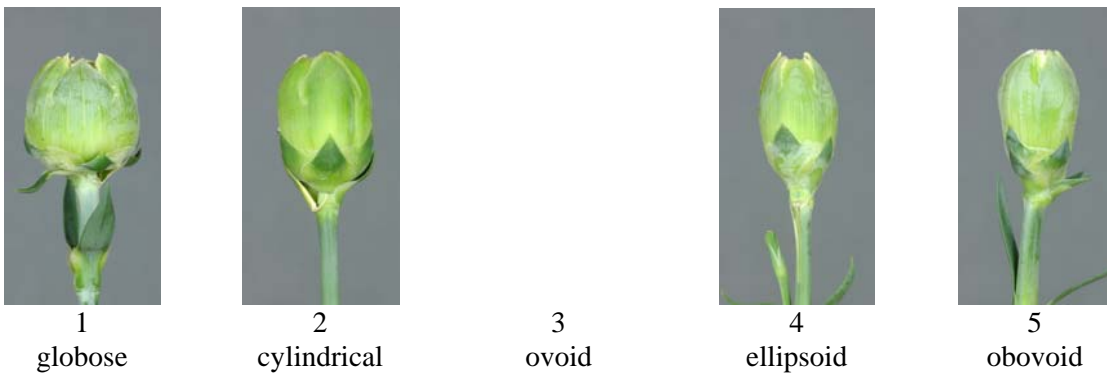
Ad. 14: Leaf: longitudinal axis



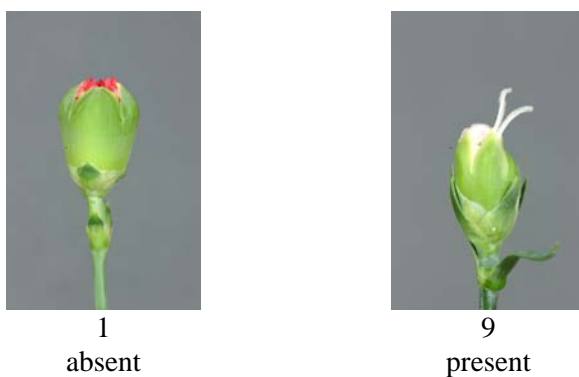
Ad. 18: Leaf: spiny ciliation of margin

To be observed by gently rubbing to and fro with your finger along the margin of the leaf.

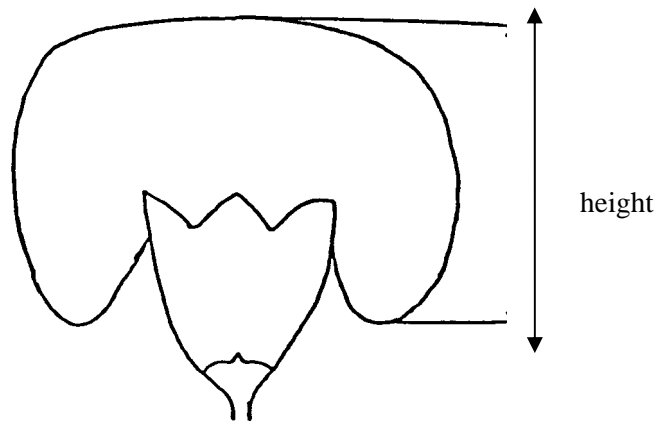
Ad. 19: Bud: shape



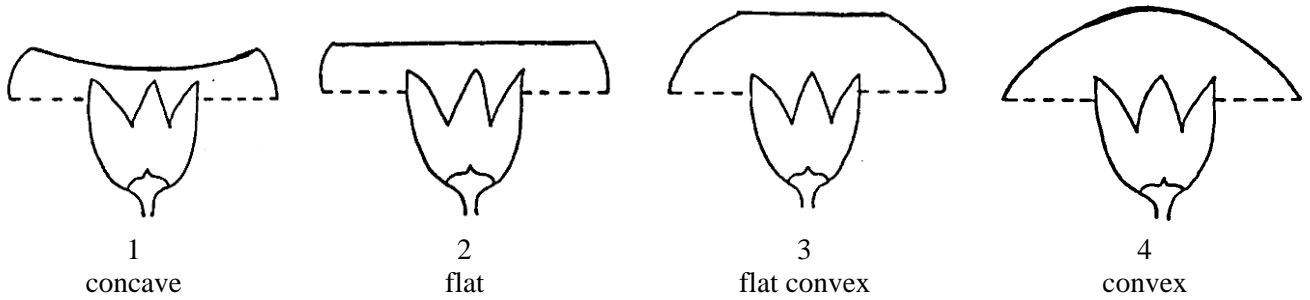
Ad. 20: Bud: extrusion of styles



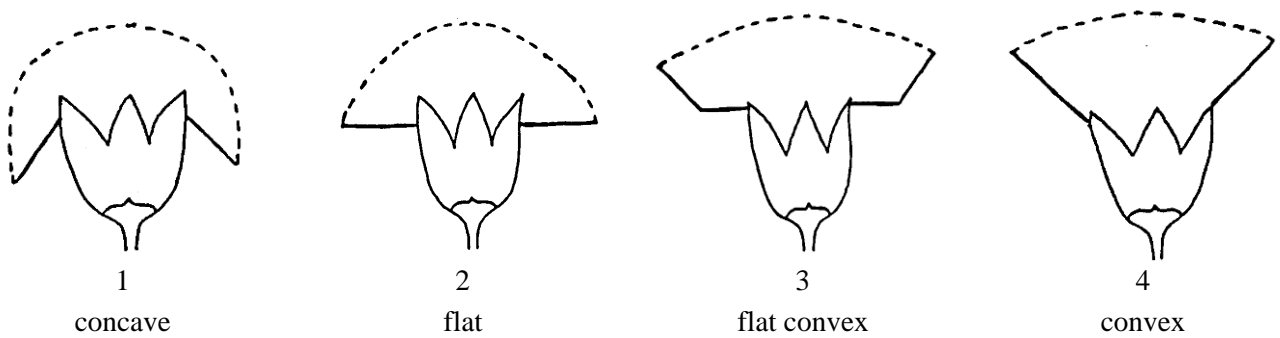
Ad. 37: Corolla: height



Ad. 38: Corolla: profile of upper part

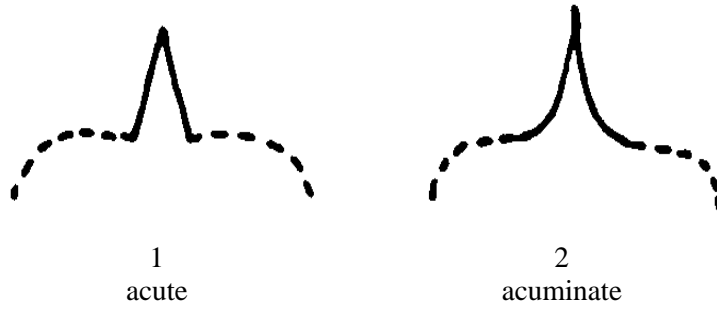


Ad. 39: Corolla: profile of lower part



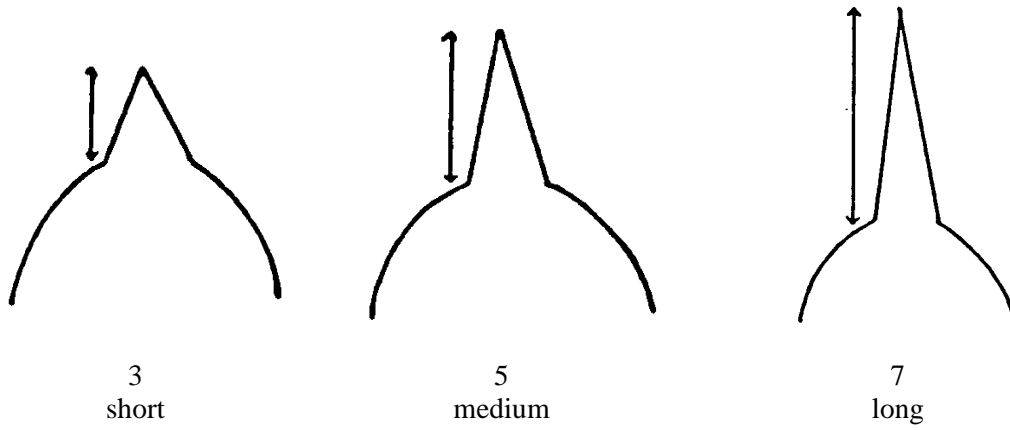
Ad. 23: Epicalyx: apex of outer lobes

Ad. 25: Epicalyx: apex of inner lobes

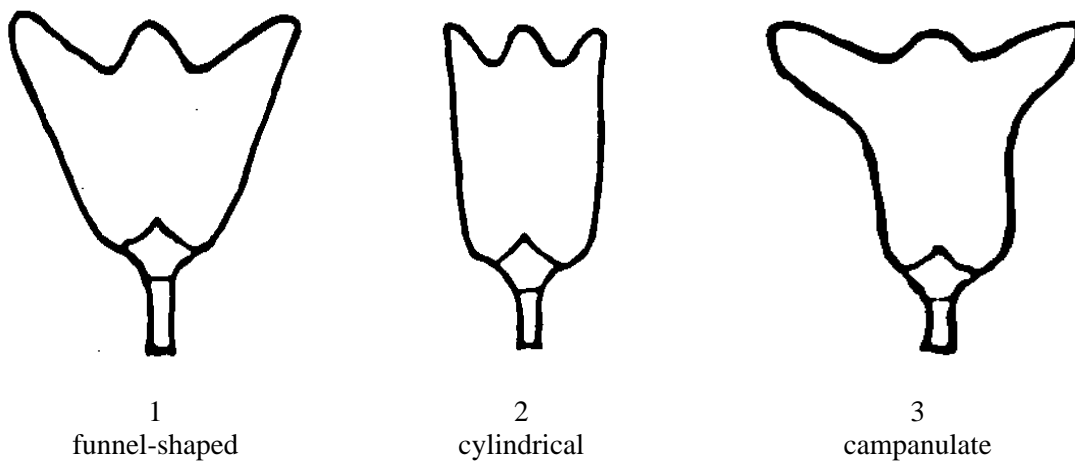


Ad. 24: Epicalyx: length of apex of outer lobes

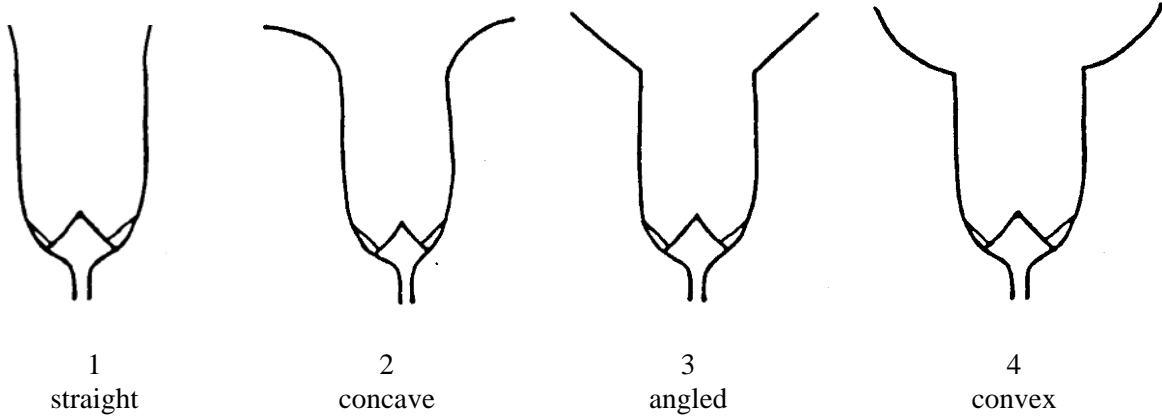
Ad. 26: Epicalyx: length of apex of inner lobes



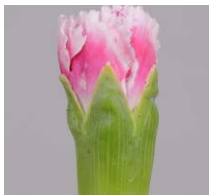
Ad. 28: Calyx: shape



Ad. 29: Calyx: longitudinal axis of lobes (tip excluded)



Ad. 33: Calyx: shape of lobe



1
long acute



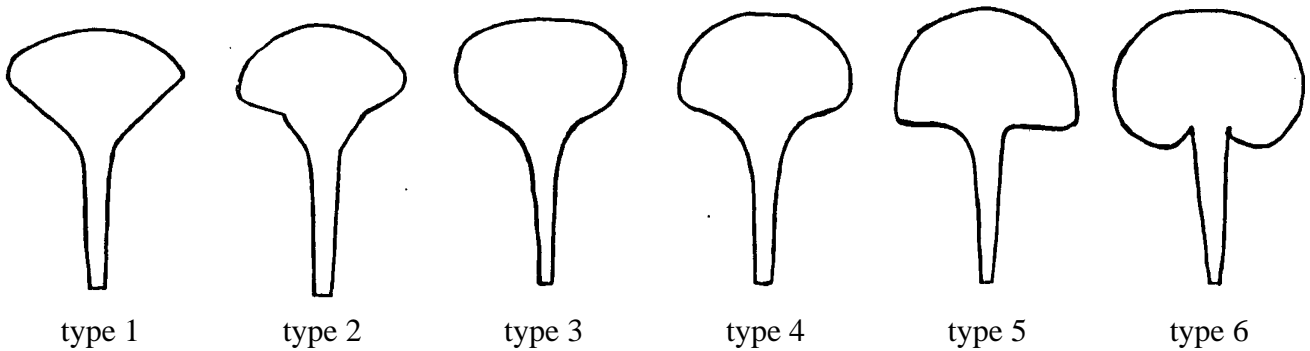
2
short acute

3
short acuminate

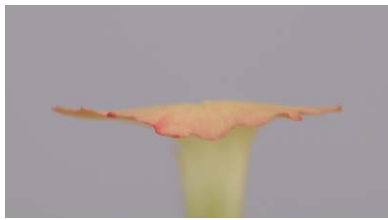
Ad. 35: Flower type

When a flower has more than 5 petals, it can be classified as a double flower type.

Ad. 40: Petal: predominant shape



Ad. 41: Petal: surface of blade



1
flat








2
undulate



3
folded

Ad. 43: Petal: type of incisions of margin

1	sinuate	
2	crenate	
3	dentate	
4	serrate	
5	crenate-dentate	

Ad. 47: Petal: number of colors of blade (claw and macule excluded)



1
one



2
two



3
three

4
more than three

Ad 48: Varieties with more than one color only: Petal: color pattern of blade (claw and macule excluded)



1
picotee



2
edged



3
striated



4
speckled



5
picotee-striated



6
picotee-
speckled



7
edged-striated



8
edged-speckled



9
picotee-striated-
speckled



10
edged-striated-
speckled



11
striated-
speckled

12
shading off

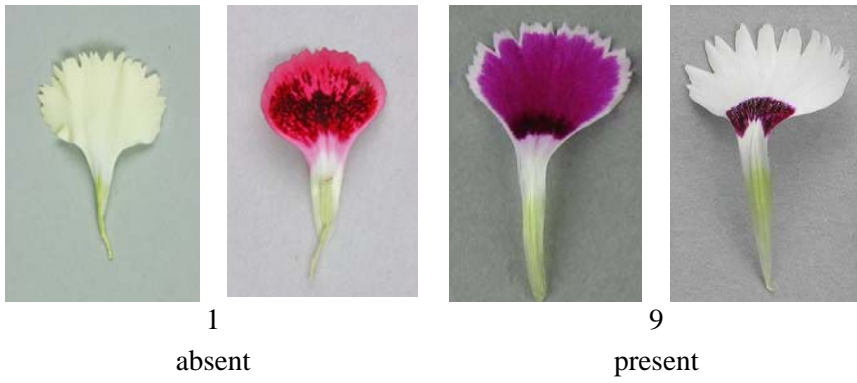
13
flushed

Ad.49: Petal: main color (macule and claw excluded)

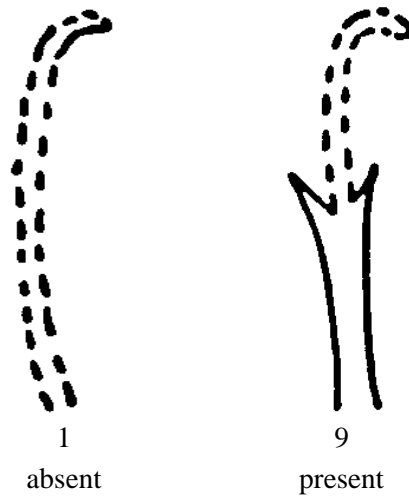
Ad. 50: Petal: secondary color (macule and claw excluded)

The main color is the color with the largest total surface area, the secondary color (if present) is the color with the second largest total surface area. In case of when none of the colors is clearly predominant then the lightest color will be the main color.

Ad. 51: Petal: macule



Ad. 58: Style: shoulder



9. Literature

Galbally, J. & Galbally, E., 1997: Carnations and Pinks. Timber Press Inc., Portland, Oregon, ISBN 0-88192-382-6

10. Technical Questionnaire

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
		Application date: (not to be filled in by the applicant)
TECHNICAL QUESTIONNAIRE to be completed in connection with an application for plant breeders' rights		
1. Subject of the Technical Questionnaire		
1.1 Botanical name	<input type="text" value="Dianthus L."/>	
1.2 Common name	<input type="text" value="Carnation"/>	
2. Applicant		
Name	<input type="text"/>	
Address	<input type="text"/>	
Telephone No.	<input type="text"/>	
Fax No.	<input type="text"/>	
E-mail address	<input type="text"/>	
Breeder (if different from applicant)	<input type="text"/>	
3. Proposed denomination and breeder's reference		
Proposed denomination (if available)	<input type="text"/>	
Breeder's reference	<input type="text"/>	

#4. Information on the breeding scheme and propagation of the variety

4.1 Breeding scheme

Variety resulting from:

4.1.1 Crossing

(a) controlled cross []
(please state parent varieties)

(.....)	x	(.....)
female parent		male parent

(b) partially known cross []
(please state known parent variety(ies))

(.....)	x	(.....)
female parent		male parent

(c) unknown cross []

4.1.2 Mutation []
(please state parent variety)

--

4.1.3 Discovery and development []
(please state where and when discovered and how developed)

--

4.1.4 Other []
(please provide details)

--

Authorities may allow certain of this information to be provided in a confidential section of the Technical Questionnaire.

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
<hr/>		
<p>4.2 Method of propagating the variety</p>		
<p>4.2.1 Vegetative propagation</p>		
(a) cuttings		[]
(b) <i>in vitro</i> propagation		[]
(c) other (state method)		[]
<div style="border: 1px solid black; height: 40px; width: 100%;"></div>		
<p>4.2.2 Other []</p>		
<p>(please provide details)</p>		
<div style="border: 1px solid black; height: 100px; width: 100%;"></div>		

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
<p>5. Characteristics of the variety to be indicated (the number in brackets refers to the corresponding characteristic in Test Guidelines; please mark the note which best corresponds).</p>			
Characteristics	Example Varieties	Note	
<p>5.1 Plant: cultural type</p>			
Type 1: one flower per stem		1 []	
Type 2: spray		2 []	
Type 3: pot carnation		3 []	
Type 4: outdoor carnation		4 []	
<p>In varieties bred to be grown as spray carnation, the lateral flower heads or lateral shoots are not removed. In varieties bred to be grown as one flower per stem carnation, the lateral flower heads or lateral shoots (if existing) are removed at an early stage to leave just the terminal flower head.</p>			
<p>Varieties bred to be grown as pot carnation do not need a cold treatment (period) to induce optimal flowering. Varieties bred to be grown as outdoor carnation, do need a cold treatment (period) to induce optimal flowering.</p>			
<p>5.2 Flower: type (35)</p>			
single	Calypso Star (type 4)	1 []	
double	Martina (type 2)	2 []	
<p>5.3 Flower: main color</p>			
white or near white		1 []	
green		2 []	
yellow		3 []	
orange		4 []	
pink		5 []	
purple		6 []	
red		7 []	
violet		8 []	
violet red		9 []	
<p>The main color is the color with the largest total surface area, the second color (if present) is the color with the second largest total surface area. In case of when none of the colors is clearly predominant then the lightest color will be the main color.</p>			

TECHNICAL QUESTIONNAIRE		Page {x} of {y}	Reference Number:
Characteristics		Example Varieties	Note
5.4	Petal: secondary color (macule and claw excluded)		
(50)			
	white or near white	Candela (type 2)	1 []
	yellow		2 []
	orange		3 []
	pink	Intermezzo (type 2)	4 []
	red	Martina (type 2)	5 []
	pale purple		6 []
	purple	Spectro (type 2)	7 []
	violet		8 []

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:	
<p>6. Similar varieties and differences from these varieties</p> <p><i>Please use the following table and box for comments to provide information on how your candidate variety differs from the variety (or varieties) which, to the best of your knowledge, is (or are) most similar. this information may help the examination authority to conduct its examination of distinctness in a more efficient way.</i></p>			
Denomination(s) of variety(ies) similar to your candidate variety	Characteristic(s) in which your candidate variety differs from the similar variety(ies)	Describe the expression of the characteristic(s) for the similar variety(ies)	Describe the expression of the characteristic(s) for your candidate variety
<i>Example</i>	<i>flower color</i>	<i>orange</i>	<i>orange red</i>
<p>Comments:</p>			

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
7. Additional information which may help in the examination of the variety		
7.1 In addition to the information provided in sections 5 and 6, are there any additional characteristics which may help to distinguish the variety?		
Yes [] No []		
(if yes, please provide details)		
7.2 Are there any special conditions for growing the variety or conducting the examination?		
Yes [] No []		
(if yes, please provide details)		
7.3 Other information		
7.3.1 Main use		
(a) garden plant []		
(b) pot plant []		
(c) cut-flower []		
(d) other []		
(please provide details)		
7.3.2 A representative color <u>image</u> of the variety should accompany the technical questionnaire.		
8. Authorization for release		
(a) Does the variety require prior authorization for release under legislation concerning the protection of the environment, human and animal health?		
Yes [] No []		
(b) Has such authorization been obtained?		
Yes [] No []		
If the answer to (b) is yes, please attach a copy of the authorization.		

TECHNICAL QUESTIONNAIRE	Page {x} of {y}	Reference Number:
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9. Information on plant material to be examined or submitted for examination.

9.1 The expression of a characteristic or several characteristics of a variety may be affected by factors, such as pests and disease, chemical treatment (e.g. growth retardants or pesticides), effects of tissue culture, different rootstocks, scions taken from different growth phases of a tree, etc.

9.2 The plant material should not have undergone any treatment which would affect the expression of the characteristics of the variety, unless the competent authorities allow or request such treatment. if the plant material has undergone such treatment, full details of the treatment must be given. in this respect, please indicate below, to the best of your knowledge, if the plant material to be examined has been subjected to:

- (a) Microorganisms (e.g. virus, bacteria, phytoplasma) Yes [] No []
- (b) Chemical treatment (e.g. growth retardant, pesticide) Yes [] No []
- (c) Tissue culture Yes [] No []
- (d) Other factors Yes [] No []

Please provide details for where you have indicated “yes”.

.....

9.3 Has the plant material to be examined been tested for the presence of virus or other pathogens?

Yes []

(please provide details as specified by the authority)

No []

10. I hereby declare that, to the best of my knowledge, the information provided in this form is correct:

Applicant's name

Signature