
RECOMMENDED GRADES & STANDARDS FOR FRESH CUT FLOWERS



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Photography

The Floral Marketing Association and Society of American Florists gratefully acknowledges the following organizations for providing the photographs used in this manual:

Colombia Flower Council for photographs of alstroemeria, anthurium, aster, bird of paradise, carnation, chrysanthemum, gerbera, ginger, gypsophila, hybrid lily, hybrid tea rose, liatris, limonium, miniature carnations, pompon, solidaster, spray rose, and statice;

California Cut Flower Commission for photographs of iris and gladiolus;

Flower Council of Holland for the tulip photograph.

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Preface

For many years, the floral industry has recognized the need for product specifications and standards for fresh cut flowers. With rapid growth in the international movement of fresh cut flowers, there is now a significant need to provide a base of common understanding and terminology among growers, shippers, sellers, and buyers.

A joint committee representing the Floral Marketing Association and the Society of American Florists has compiled recommended grades and standards for fresh cut flowers into a format that is clear, simple, and relatively easy to use. In this manual, you will find product descriptions, histories, dimensions, stage of development line drawings, characteristics, and terminology for a variety of fresh cut flower crops.

Although characteristics of individual flowers will vary, the system used in this manual is made uniform by applying the same terminology to identify separate grades. For example, the number/color grading system replaces the existing subjective grading terminology such as “fancy,” “extra fancy,” “super select,” etc. Standards have been developed for each grade so that the buyer can be assured that product marketed at a certain grade will meet or exceed the standard dimensions for that grade. Varietal and/or climatic conditions will influence product characteristics such as flower diameter and flower count.

Acceptance of these specifications by individuals and companies in the industry will result in a set of voluntary grades and standards and will not preclude the marketing of crops which vary from these recommendations. Buyers may also find that a supplier will not handle all the grades for a given crop.

Users of this manual should take a few minutes to become familiar with how the manual is organized by reviewing the section “How to Use This Manual.” This section includes a description of the dimension chart. A glossary is also included for individuals not familiar with horticulture terms.

This manual was introduced in June 1994 with eight crops. Grades and standards for an additional thirteen crops were added in September 1996, bringing the total number of crops to twenty-one.

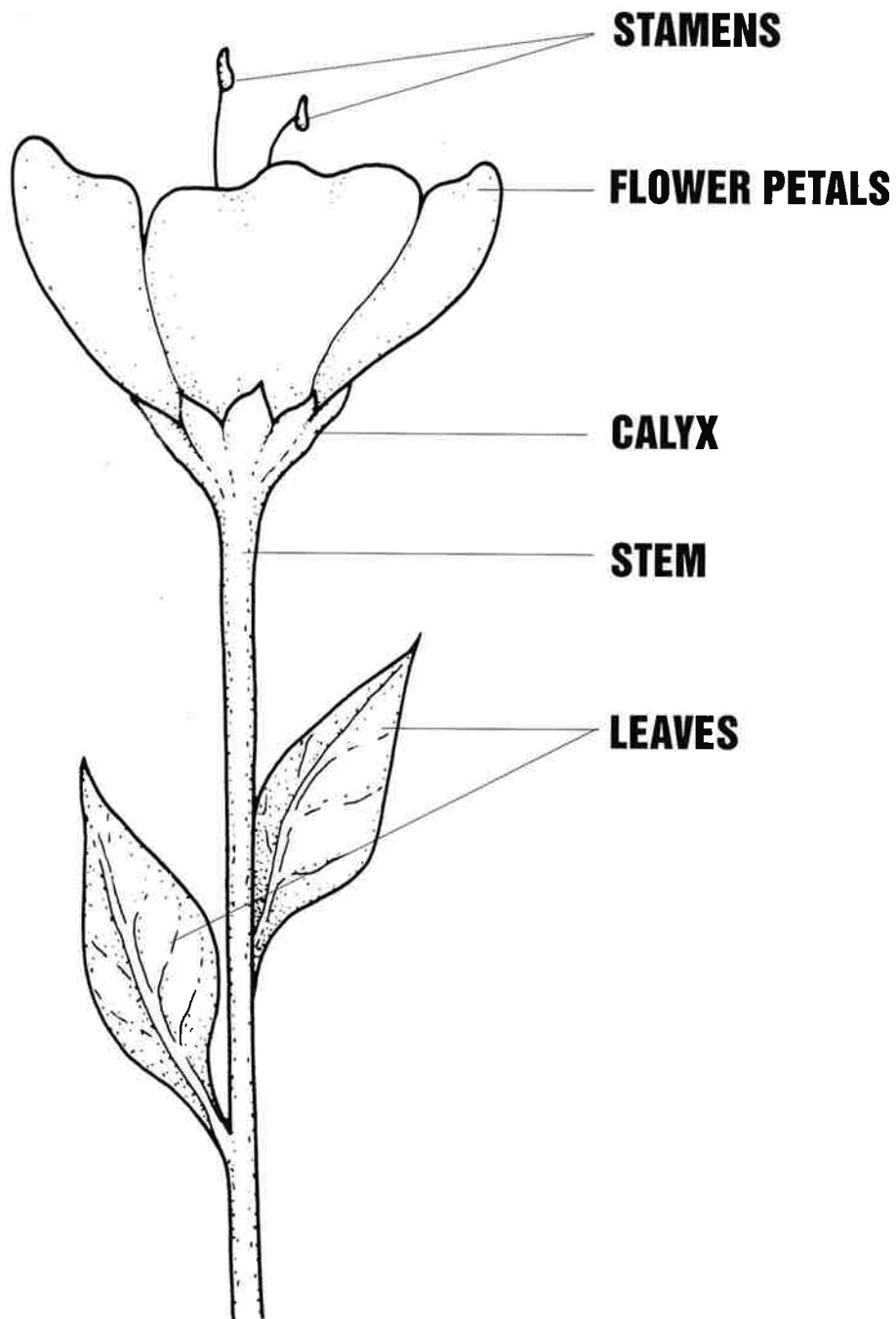
How to Use This Manual

Crop Format

The information for each crop is arranged in a consistent format which will help the user to find information quickly. The order of information is as follows:

- Product description -** Briefly describes the crop.
- About the crop -** Provides a brief history of the crop and lists the primary production areas.
- Dimensions chart -** Lists the grades and physical dimensions which qualify the crop for each grade at the time of harvesting.
- Stages of development -** Four drawings of each crop at key stages of floral development.
- Characteristics -** Descriptive statements for each crop are categorized into three sections: Stems/Foliage, Flowers, and General.
- Terminology -** Defines terms that are specific to each crop. A complete glossary is also included in the back of this manual.

Parts of the Flower

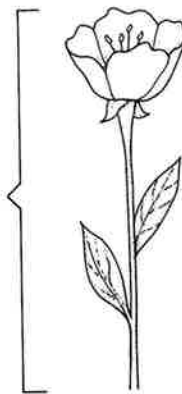


Understanding the Dimension Chart

The dimension chart for each crop includes criteria which are used to separate the grades. These criteria may include minimum length, stem strength, stem deviation/curvature, minimum flower count per stem, and minimum flower diameter.

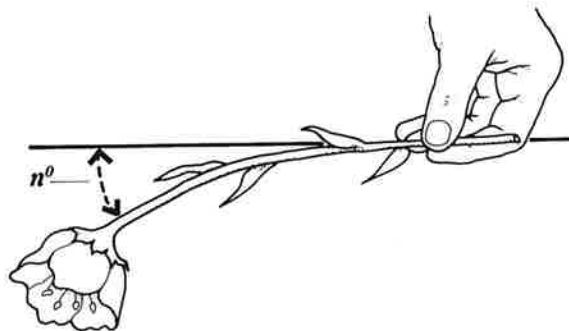
MINIMUM LENGTH

This measurement is taken from the top of the flower head to the bottom of the stem. The measurement is expressed in inches and centimeters.



STEM STRENGTH

This measurement is taken by holding the bottom of a flower stem in a horizontal position and measuring the degrees of deflection of the flower head from the horizontal plane.



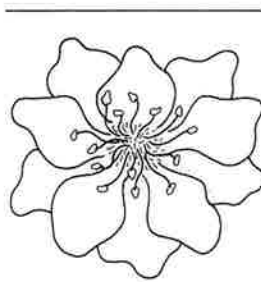
STEM DEVIATION

This measures the straightness of a stem by laying the stem along a straight line and noting the natural deviation from the line. The measurement is expressed in inches and centimeters.



MINIMUM FLOWER DIAMETER

This measures the distance across the top of a flower in a full open stage of development. The diameter is most easily taken by looking down on the flower head. The measurement is expressed in inches and centimeters.



MINIMUM FLOWER COUNT PER STEM

This is the minimum number of flowers associated with the main stem.

Grade and Color System

A numerical grading system starting with #1 has been established. Each crop dimension chart includes from one to ten grades. Each grade number is associated with a specific color designation which is to be used on tags, labels, etc., for quick identification. The grades and associated colors are as follows:

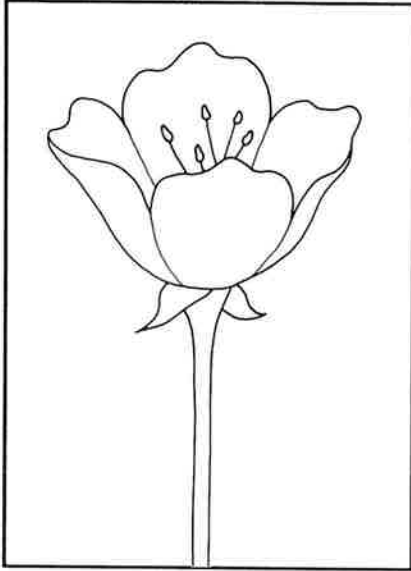
- # 1 Blue (Pantone Reflex Blue)
- # 2 Yellow (Pantone 101)
- # 3 Red (Pantone 185)
- # 4 Green (Pantone 347)
- # 5 Orange (Pantone 164)
- # 6 Violet (Pantone 2582)
- # 7 White
- # 8 Light Blue (Pantone 278)
- # 9 Grey (Pantone 430)
- #10 Brown (Pantone 175)

The grade/color system used in this manual is tied to a specific set of criteria for each crop. It replaces traditional grading terminology such as “select,” “fancy,” or “extra fancy.” Traditional grading terminology was not based upon a specific set of criteria used by all suppliers. Therefore, one supplier's “fancy” grade did not necessarily equate to another supplier's “fancy” grade. This manual encourages suppliers to adopt the grade/color approach for fresh cut flowers and move away from the traditional and more subjective grading terminology. Growers and shippers who adopt the grades and standards in this manual may not supply product in all of the grades for a given crop. For example, a rose grower may supply roses in only 5 of the 10 listed grades.

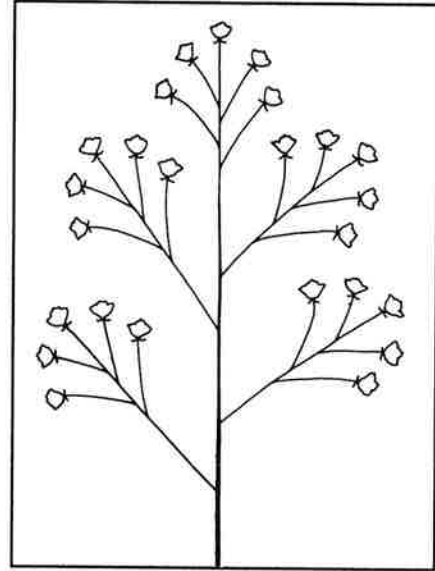
Do not assume that any particular grade is better than the other grades. For example, a crop graded as number 1 simply meets a different set of minimum dimensions than the other grades.

Flower Types

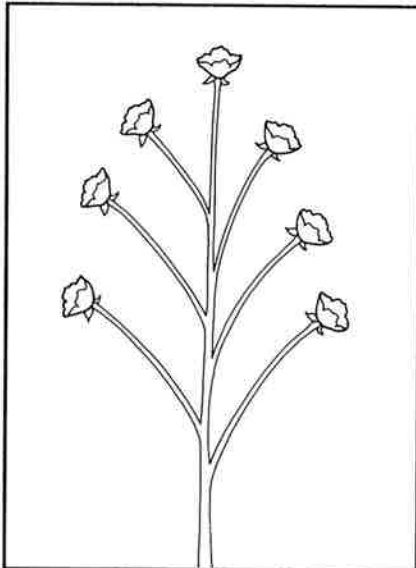
SINGLE



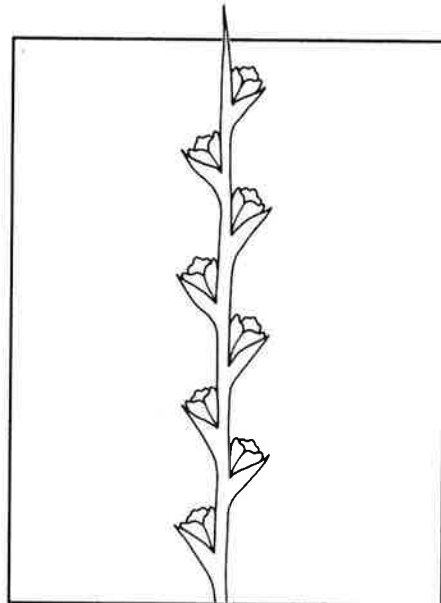
CLUSTER



SPRAY



SPIKE



ALSTROEMERIA



PRODUCT DESCRIPTION

Alstroemeria, *Alstroemeria species* and hybrids, feature multiple trumpet shaped flowers on one or more peduncles.

ABOUT ALSTROEMERIA

The alstroemeria originated in Chile and is named after the botanist Baron Claude Alstroemer. There are about 60 known species but only two main varieties of alstroemeria: the orchid type and the butterfly type. Common names include Inca or Peruvian lily and lily-of-the-Incas. Today, alstroemeria are supplied to the U.S. floriculture industry primarily from these production areas: California, Colombia, Ecuador, Guatemala, Mexico, and The Netherlands.

ALSTROEMERIA

DIMENSIONS

Note: Due to varietal differences and climatic conditions in the various growing areas, the number of peduncles per stem may vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	30" 75 cm	26" 65 cm	24" 60 cm
Minimum Flower Diameter	1 1/2" 3.75 cm	1 1/2" 3.75 cm	1 1/2" 3.75 cm
Stem Strength	20°	20°	20°
Stem Deviation/ Curvature	3" 7.5 cm	3" 7.5 cm	3" 7.5 cm
Minimum Flowers per Stem	3	3	3

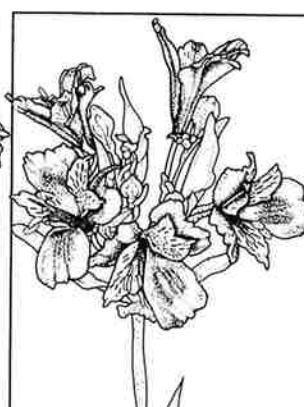
STAGES OF DEVELOPMENT



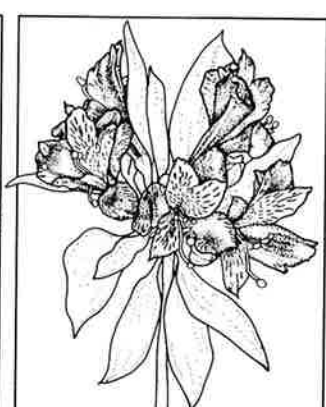
Stage 1



Stage 2



Stage 3



Stage 4

ALSTROEMERIA

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage color should be pale to medium green and glossy. Depth of color depends on variety.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Alstroemeria are available in many colors.
- Some varieties are speckled with black or brown in the trumpet.
- Flower maturity may vary per stem.
- Alstroemeria flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 80% relative humidity.
- Alstroemeria are ethylene sensitive. Postharvest STS treatments can enhance shelf-life and reduce ethylene damage.
- Symptoms of ethylene damage may include flower petal drop and translucent flower petals.
- Anticipated vase life in clean containers with preservative solution is a minimum of 7 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Foliage of some cultivars may yellow prior to flower senescence.
- Generally accepted packing is 10 stems per bunch.

ALSTROEMERIA

TERMINOLOGY

- Peduncle** - Short "lateral" of 1.5-4.75 inches (4-12 cm) at the top of the alstroemeria stem bearing flowers. Each peduncle may have 1-3 flowers.
- Orchid Type** - Varieties of alstroemeria which have longer stems, but shorter peduncles.
- Butterfly Type** - Varieties of alstroemeria which have shorter stems. The crown of peduncles is typically more uniform in length.

ANTHURIUM



PRODUCT DESCRIPTION

Anthurium, *Anthurium andraeanum*, is a single, waxy heart-shaped spathe that supports an elongated spadix which holds the true flowers.

ABOUT ANTHURIUM

Anthuriums originated in the tropical and sub-tropical forests of South and Central America. Over 600 species are known to exist. Common names include painted tongue, flamingo flower, and hawaiian heart. Varieties with varying shaped spathes have been developed over the years.

Today, anthuriums are supplied to the U.S. floriculture industry primarily from these production areas: the Dominican Republic, Hawaii, Jamaica, and Trinidad.

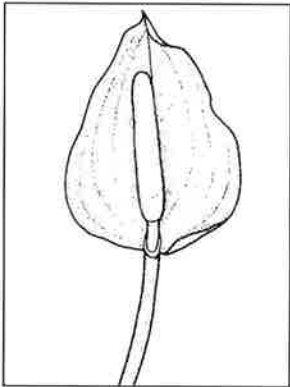
ANTHURIUM

DIMENSIONS

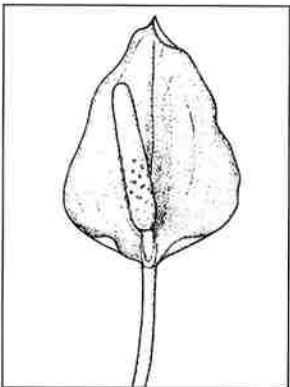
Note: Overall length equals tip of spathe to base plus stem.

Grade	1	2	3	4
Color Designation	Blue	Yellow	Red	Green
Minimum Length	24" 60 cm	20" 50 cm	16" 40 cm	12" 30 cm
Minimum Spathe Diameter	6" 15 cm	5" 12 cm	4" 10 cm	2 1/2 " 6 cm
Stem Strength	NA	NA	NA	NA
Stem Deviation/ Curvature	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	1	1	1	1

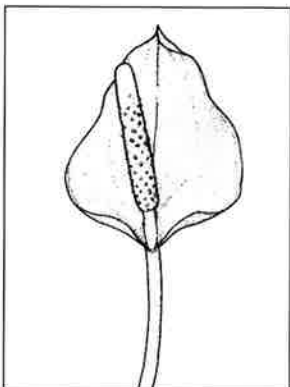
STAGES OF DEVELOPMENT



Stage 1



Stage 2



Stage 3

ANTHURIUM

CHARACTERISTICS

STEMS/FOLIAGE

- Anthuriums are shipped without foliage.
- Stems are medium to deep green in color.
- Stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Anthuriums are available in many solid and variegated colors.
- The spathe has a waxy appearance.
- The spathe has various shapes depending on the variety.
- The spadix may be white or colored depending on the cultivar.
- Anthuriums should be free from discoloration, burning, and physical damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Anthuriums are cold sensitive.
- Recommended storage temperature is 55 degrees F (13 degrees C) with at least 50% relative humidity.
- Anticipated vase life in clean containers with preservative solution is a minimum of 14 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is 25 or 50 stems per tray.

ANTHURIUM

TERMINOLOGY

- Butterfly Type -** A variety of anthurium which has a small butterfly-shaped spathe.
- Mickey Mouse -** A variety of anthurium which has a small- to medium-sized spathe with upper lobes that resemble ears.
- Obaki -** A variety of anthurium which has at least two colors on the spathe.
- Pee Wee -** A variety of anthurium which has a spathe less than 3" wide. Also known as corsage anthurium.
- Spadix -** Elongated spike that sits above the spathe; it contains the true flowers that begin maturing at the base of the spadix.
- Spathe -** Colorful heart-shaped structure that supports that spadix. It is generally referred to as the flower.
- Tulip Anthurium -** Varieties of anthurium that feature a round tulip-shaped spathe.

SPRAY ASTERS



PRODUCT DESCRIPTION

Aster, novi-belgii, is a bush whose branching stems have laterals in a spray formation with multiple daisy-like flowers per lateral.

ABOUT SPRAY ASTERS

Asters are ancient wildflowers that were considered sacred to Greek and Roman gods. One myth tells of the Greek god Virgo scattering stardust on the Earth and the fields blooming with asters. Another tells of the goddess Asterea looking down upon the Earth and seeing no stars. Saddened by the sight, she began to cry and asters bloomed where her tears fell.

Asters as we know them are native to North America. In 1637, John Tradescant took native asters from America and introduced them to Europe.

Today, spray asters are supplied to the U.S. floriculture industry primarily from these production areas: California, Colombia, Israel, and Mexico.

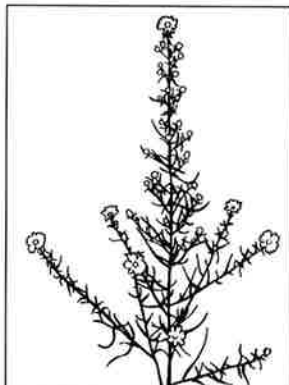
SPRAY ASTERS

DIMENSIONS

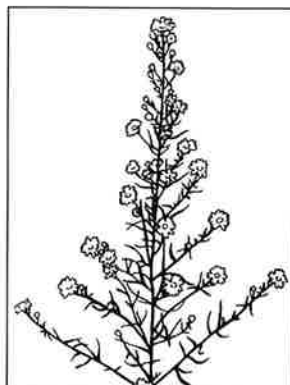
Note: Due to climatic conditions in the various growing regions and plant maturity at harvest, the weight per bunch may vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	28" 70 cm	24" 60 cm	20" 50 cm
Minimum Stems per Bunch	10	10	10
Minimum Weight per Bunch	10.5 oz 300 gm	8.0 oz 230 gm	6.5 oz 180 gm
Stem Strength	5°	10°	10°
Stem Deviation/ Curvature	1/2"	1/2"	1/2"
Minimum Flowers per Stem	NA	NA	NA

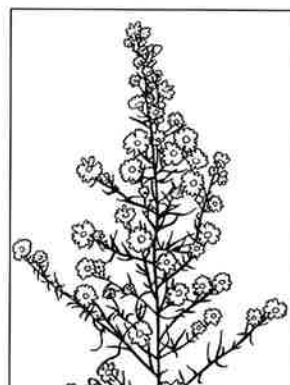
STAGES OF DEVELOPMENT



Stage 1



Stage 2



Stage 3

SPRAY ASTERS

CHARACTERISTICS

STEMS/FOLIAGE

- Elongated foliage should be light to medium.
- Foliage may be removed prior to shipping.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Spray asters are available in white and shades of light violet to blue; spray aster have yellow centers.
- Flower diameter will vary from $\frac{3}{8}$ " to 1" in diameter, depending upon variety.
- Flowers should be uniformly round.
- Flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 35-40 degrees F (2-5 degrees C) with at least 85% relative humidity.
- Asters are ethylene sensitive. Postharvest STS treatments can enhance shelf-life and reduce ethylene damage.
- Anticipated vase life in clean containers with preservative solution is a minimum of 5 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Refer to the dimensional chart for generally accepted grade and weight per bunch specifications.

SPRAY ASTERS

TERMINOLOGY

Butterfly Type - General term used to refer to *novi-belgii* asters.

Monte Casino - *Aster ericoides*, which is often referred to as a variety of spray aster, has tiny white or purple flowers.

Novi-Belgii - A family of small asters of the *novi-belgii* genus.

Suntop - A variety of *aster ericoides*.

BIRDS OF PARADISE



PRODUCT DESCRIPTION

Bird of paradise, *Strelitzia reginae*, has a boat-shaped bract which contains several brilliant orange florets, each with a blue tongue.

ABOUT BIRDS OF PARADISE

Birds of paradise are native to sub-tropical South Africa, where they are known as crane flowers. They are actually members of the banana family. It's botanical name, *Strelitzia reginae*, was named to honor Queen Charlotte Sophia, wife of England's King George III and duchess of Mecklenburg Strelitz. Ralph Dewey of Vista, California started the commercial use of birds of paradise in the United States in the early 1950s.

Today, birds of paradise are supplied to the U.S. floriculture industry primarily from these production areas: California, Costa Rica, Guatemala, Hawaii, Jamaica, Mexico, and Spain.

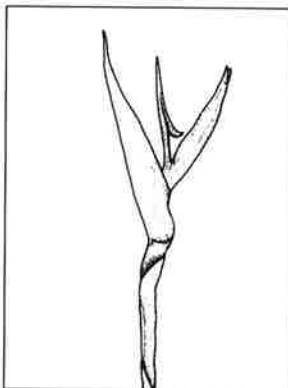
BIRDS OF PARADISE

DIMENSIONS

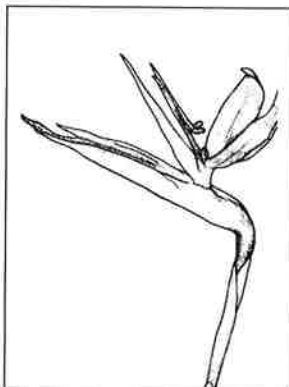
Note: Due to varietal differences and climatic conditions in the various growing areas, bract size may vary.

Grade	1	2	3	4
Color Designation	Blue	Yellow	Red	Green
Minimum Bract Length	8" 21 cm	7" 18 cm	6" 15 cm	5" 12 cm
Minimum Length	36" 90 cm	30" 75 cm	24" 60 cm	20" 50 cm
Stem Strength	0	0	0	0
Stem Deviation/ Curvature	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm
Minimum Bracts per Stem	1	1	1	1
Minimum Florets per Bract	4	4	3	3

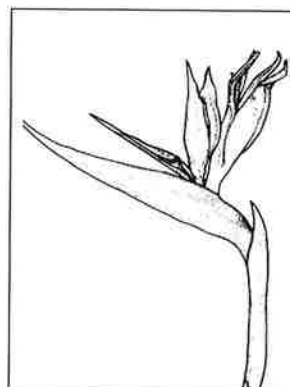
STAGES OF DEVELOPMENT



Stage 1



Stage 2



Stage 3

BIRDS OF PARADISE

CHARACTERISTICS

STEMS/FOLIAGE

- Birds of paradise are normally shipped without foliage.
- Stems should be thick and heavy.
- Stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, or discoloration.

FLOWERS

- The florets are found inside the boat-shaped bract and appear one at a time as the flower matures.
- Florets that do not emerge may be manually lifted from the bract.
- Each floret should be bright orange with a dark blue tongue.
- Bracts and florets should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Bird of paradise are cold sensitive.
- Recommended storage temperature range is 45 - 50 degrees F (8 - 10 degrees C) with at least 90% relative humidity.
- Anticipated vase life in clean containers with preservative solution is a minimum of 7 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Birds of paradise may have a protective wrap around the bract for shipping.
- Generally accepted packing is 5 stems per bunch or individually in trays.

BIRDS OF PARADISE

TERMINOLOGY

Bract - The outer sheath which holds the florets.

Floret - A small flower which is usually grouped with other florets to form a larger flower mass.

Sheath - Another term for the bract.

CARNATIONS



PRODUCT DESCRIPTION

Carnations consist of flowers from the carnation plant, *Dianthus caryophyllus*, which have been disbudded to the terminal bud, excluding the cluster or miniature type.

ABOUT CARNATIONS

The carnation was first discovered in the Far East. Carnations were widely mentioned in Roman mythology. They were known to the Romans as the flower of Jove or Jupiter, the chief god among Romans. Pliny, whose records of natural history were written in 50 B.C., indicated that carnations had been cultivated in the Roman Empire for many centuries.

Little is known about the carnation from the time of the Romans until the late 13th century. It is generally thought that the carnation was cultivated during this period by the monks who saved seed of the better varieties and had some part in the development of this flower.

There are two main groups of carnation varieties: Sim and Mediterranean. Carnations gained great popularity in 1945 when commercial production began in the United States. Today, carnations are supplied to the U.S. floriculture industry primarily from these production areas: California, Colorado, and Colombia.

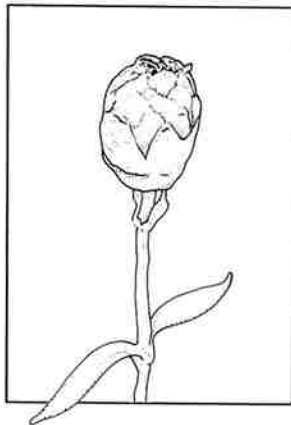
CARNATIONS

DIMENSIONS

Note: Due to varietal differences and climatic conditions in the various growing areas, flower diameter may vary.

Grade	1	2	3	4
Color Designation	Blue	Yellow	Red	Green
Minimum Length	24" 60 cm	20" 50 cm	18" 45 cm	15" 38 cm
Minimum Flower Diameter	2 3/4" 6.9 cm	2 1/4" 5.6 cm	2" 5 cm	2" 5 cm
Stem Strength	20°	20°	20°	20°
Stem Deviation/ Curvature	1/2" 1.25 cm	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	1	1	1	1

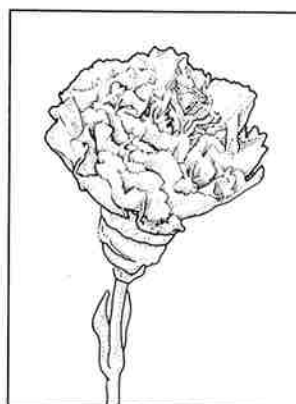
STAGES OF DEVELOPMENT



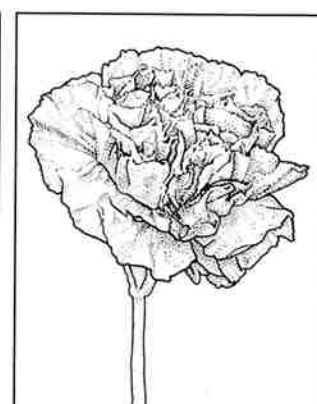
Stage 1



Stage 2



Stage 3



Stage 4

CARNATIONS

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage color should be bluish-green to green to grayish-green depending upon the variety.
- Leaves may vary from a slight wave to a tight curl.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration. (Note: occasional browning or yellowing of leaf tips might occur on certain varieties on a seasonal basis.)
- Whitish residue on leaves is natural, not pesticide residue.

FLOWERS

- Carnations are available in many colors and petal shapes.
- Flowers should be uniform in color and stage of openness within each bunch.
- Calyx should not be split.
- Flowers should be free from slab sides and sleepy characteristics.
- Flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 90% relative humidity.
- Carnations are ethylene sensitive. Postharvest STS treatments can enhance shelf-life and reduce ethylene damage.
- Sleepy characteristics induced by ethylene include inversion of inner petals and inability of flower to open fully.
- Anticipated vase life in clean containers with preservative solution is a minimum of 8 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is 20 or 25 stems per bunch.

CARNATIONS

TERMINOLOGY

- Bull Head -** A flower that has multiple or overlapping petals in the center of the flower. Generally characterized by a hard calyx or “ball-shaped” center.
- Novelty -** Generally refers to varieties of carnations that have flower colors other than solid red, white, or pink.
- Slab Side -** A flower that has failed to open symmetrically. The petals on part of the circumference are still straight up while remaining petals have opened in a normal fashion.
- Sleepy -** Flowers that do not open completely as a result of exposure to excessive quantities of ethylene gas. Symptoms may include reverse curl of individual inner petals. A carnation cut when the bud is too tight may also cause this condition.
- Split Calyx -** When the outer group of flower leaves, which are green in color and smaller than the inner leaves or petals, are torn or cracked.
- Tint -** A carnation flower that has been colored by the use of an absorption dye.

CHRYSANTHEMUMS



PRODUCT DESCRIPTION

The standard, spider, and disbud chrysanthemums, *Dendranthema grandiflora*, consist of a single flower (disbudded).

ABOUT CHRYSANTHEMUMS

Cultivated over 3,000 years ago by the Chinese, chrysanthemums are known as “The Flower of the East.” Tao Yvanming became the first historical breeder in 400 A.D. After his death, his native city was named “Juxian,” the City of Chrysanthemums.

By 700 A.D., the popularity of chrysanthemums had spread throughout Japan. Emperor Mikado, ruler of Japan, was so taken by the beauty of these flowers that he instituted a chrysanthemum show at Kyoto where he proclaimed the flower as his personal emblem to be used by royalty only.

Chrysanthemums spread throughout England and reached the United States around 1847. Today, chrysanthemums are supplied to the U.S. floriculture industry primarily from these production areas: California, Colombia, Ecuador, Mexico, Costa Rica, and The Netherlands.

CHRYSANTHEMUMS

DIMENSIONS

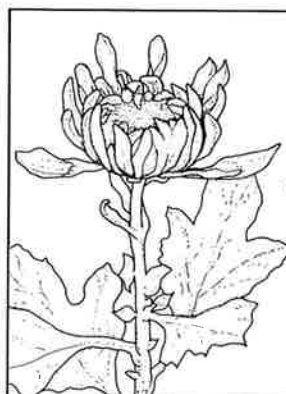
Note: Due to varietal differences and climatic conditions in the various growing areas, flower diameter may vary.

Grade	1	2
Color Designation	Blue	Yellow
Minimum Length	28" 70 cm	24" 60 cm
Minimum Flower Diameter	4" 10 cm	4" 10 cm
Stem Strength	20°	20°
Stem Deviation/ Curvature	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	1	1

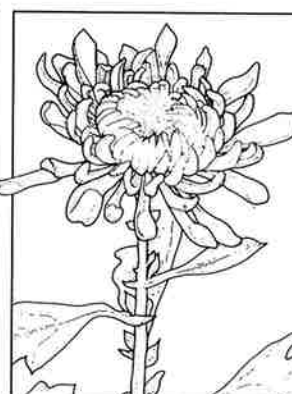
STAGES OF DEVELOPMENT



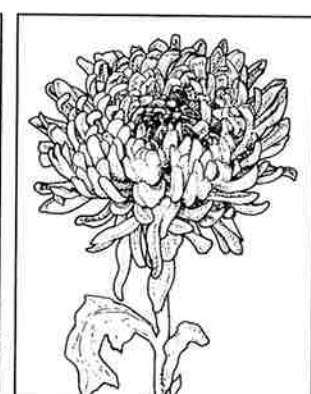
Stage 1



Stage 2



Stage 3



Stage 4

CHRYSANTHEMUMS

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage should be present and uniformly green.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.
- Stems should not be twisted or woody.

FLOWERS

- Chrysanthemums are available in many colors and petal shapes.
- Flowers should be uniform in color and stage of openness within each bunch.
- Flowers should be free from shattering.
- Chrysanthemum flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.
- Certain varieties exhibit a condition called “pinking” due to light intensity and temperature. The petals in the center of the flower will be darker than normal. Vase life of the flower is not affected.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 90% relative humidity.
- The upper 2/3 of the stem should have foliage.
- Anticipated vase life in clean containers with preservative solution is a minimum of 7 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Foliage of some cultivars may yellow prior to flower senescence.
- Generally accepted packing is 10 stems per bunch.
- Flowers may be packed with a net covering.

CHRYSANTHEMUMS

TERMINOLOGY

- Anemone** - A flower form that is similar to a daisy except the center is larger, forming a cushion that is surrounded by flower petals.
- Cremon** - A disbudded anemone flower form.
- Disbudding** - Removal of all flower buds except the terminal one to allow one flower to develop per stem.
- Fuji** - A flower form similar to the spider except the petals may be shorter, droop less, and lack hooks on the ends.
- Incurve** - A flower form that is globose and formal with the individual petals curving upward and toward the top of the flower.
- Nets** - Used primarily to prevent physical damage during shipping and to reduce shipping costs by allowing more units per box.
- Quill** - Flower form that features petals that are tubular, elongated on the outside, and short near the center of the flower, resembling feather quills. Ends of petals are open and not flattened.
- Reflexed** - A flower form that is less globose and formal than the incurve with overlapping petals that are curved downward.
- Shattering** - Individual petals of the chrysanthemum separate from the flower. Usually caused by rough handling.
- Spider** - A flower form that features petals that are tubular and elongated in the outer rows but short in the center of the flower. The drooping outer row of petals are sometimes hooked on the ends.
- Spoon** - A flower form similar to the quill except the outer row petals are open and are flattened, resembling a spoon.

GERBERAS



PRODUCT DESCRIPTION

Gerbera, *Gerbera jamesonii*, feature one large daisy-shaped flower per stem. The flower is composed of several rings of thin, delicate petals.

ABOUT GERBERAS

Gerberas are native to Transvaal, South Africa and are also called Transvaal Daisies. The original species, *G. jamesonii*, was introduced into England in 1897. Gerberas are propagated *in vitro* in a laboratory before being planted in a greenhouse environment for commercial cut flower production. There are over 200 varieties of gerberas grown.

Today gerberas are supplied to the U.S. floriculture industry primarily from these production areas: California, Colombia, Florida, Israel, and the Netherlands.

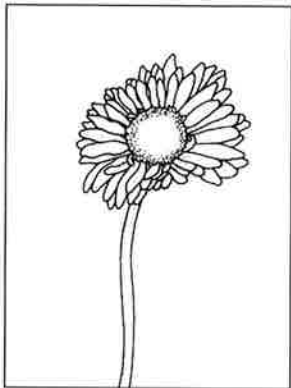
GERBERAS

DIMENSIONS

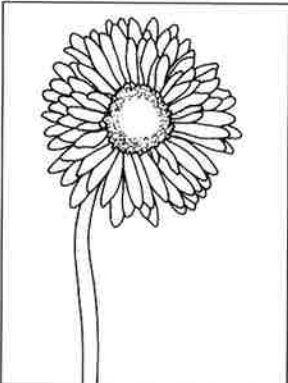
Note: Due to varietal differences, flower diameter may vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	20" 50 cm	16" 40 cm	12" 30 cm
Minimum Flower Diameter	3.5" 9 cm	3" 7.5 cm	3" 7.5 cm
Stem Strength	10°	20°	20°
Stem Deviation/ Curvature	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	1	1	1

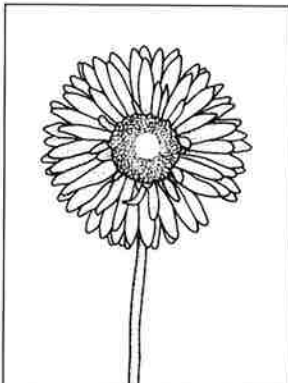
STAGES OF DEVELOPMENT



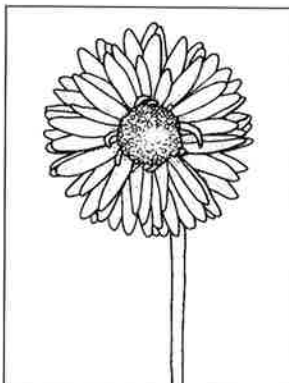
Stage 1



Stage 2



Stage 3



Stage 4

GERBERAS

CHARACTERISTICS

STEMS/FOLIAGE

- Gerberas should be shipped without foliage.
- Stems should be light green.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Gerberas are available in many colors.
- Flowers should be uniformly round.
- Flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by variety.
- Recommended storage temperature is 50 degrees F (10 degrees C) with at least 90% relative humidity.
- Gerberas are sensitive to ethylene and are sensitive to fluoride in water. Preservative solutions can enhance shelf-life and reduce ethylene damage.
- Anticipated vase life in clean containers with preservative solution is a minimum of 3 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Flowers may be packed with a cup or net over the flower or a straw on the stem.
- Generally accepted packing is 5 or 10 stems per bunch or 40 single flowers in a card.

GERBERAS

TERMINOLOGY

- Cards** - Chipboard material with slots to hold gerberas for shipping.
- Cup** - A protective cover placed over the flower to prevent physical damage during shipping.
- Net** - A protective cover placed over the flower to prevent physical damage during shipping.
- Straw** - A protective cover slipped over the stem to provide support as the flower hydrates.
- Tray** - Container that holds cards for shipping.

GINGER



PRODUCT DESCRIPTION

Ginger, *Alpinia purpurata*, features a club-shaped cluster of overlapping, triangular bracts which are generally referred to as the flower.

ABOUT GINGERS

Gingers are native to the Pacific Islands. The *Alpinia purpurata* is the most commonly cultivated variety and was named, in the early 1600s, after doctor and botanist Prospero Alpino. Ginger got its name from the similarity of its root structure to the ginger plant used as a spice.

There are more than 40 existing varieties of ginger. Some common varieties in this family are shell ginger, torch ginger, and shampoo ginger.

Today, gingers are supplied to the U.S. floriculture industry primarily from these production areas: Africa, Costa Rica, the Dominican Republic, Hawaii, Jamaica, and Southeast Asia.

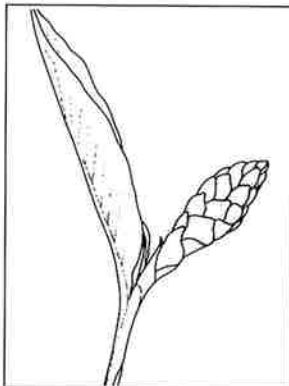
GINGER

DIMENSIONS

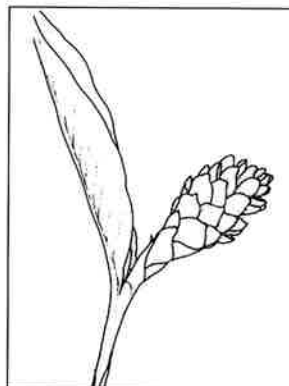
Note: Due to varietal differences and climatic conditions in the various growing areas, bract length may vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	36" 90 cm	30" 75 cm	24" 60 cm
Minimum Bract Length	8" 21 cm	7" 18 cm	6" 15 cm
Stem Strength	5°	10°	10°
Stem Deviation/ Curvature	0" 0 cm	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	1	1	1

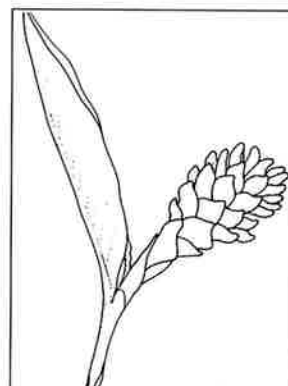
STAGES OF DEVELOPMENT



Stage 1



Stage 2



Stage 3

GINGER

CHARACTERISTICS

STEMS/FOLIAGE

- Stems and foliage color may vary by growing area and season.
- Foliage should be uniform in color and may be up to 18” long and 6” wide.
- Stems and foliage should be free from damage caused by insects, disease, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Gingers are available in several hues of red and pink.
- Multiple overlapping bracts are generally referred to as the flower.
- Bracts are clustered on the stem in the shape of a club.
- Each bract holds a small white flower. These flowers should be removed when they mature.
- Bracts should be free from discoloration, burning, and damage caused by insects, disease, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Ginger is cold sensitive.
- Recommended storage temperature is 55 degrees F (13 degrees C) with at least 90% relative humidity.
- Gingers are geotropic and should be stored upright.
- Anticipated vase life in clean containers with preservative solution is a minimum of 7 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is 5 stems per bunch.

GINGER

TERMINOLOGY

Bract - The outer sheath which holds the florets.

Geotropic - The tendency of some fresh flower stems to bend towards a vertical orientation if kept in a horizontal position.

GLADIOLUS



PRODUCT DESCRIPTION

Gladiolus, *Gladiolus grandiflorus*, flower stems consist of individual florets whorled around a terminal spike.

ABOUT GLADIOLUS

Gladiolus species were recognized over 2,000 years ago growing in the fields of Asia Minor and were called “corn lilies.” There are at least 180 known species in the genus *Gladiolus*. The use of gladiolus as cut flowers in North America developed from European hybrids that were first developed in the early 1800s.

Today, gladiolus are supplied to the U.S. floriculture industry primarily from these production areas: California, Florida, Hawaii, Illinois, Michigan, New Jersey, and New York.

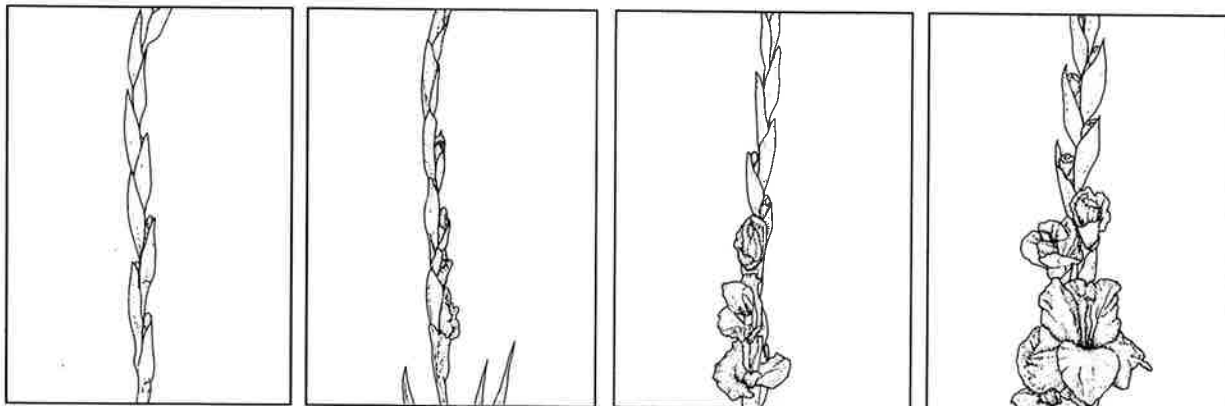
GLADIOLUS

DIMENSIONS

Note: Due to varietal differences and climatic conditions in the various growing areas, flower diameter and flower count per stem may vary.

Grade	1	2	3	4
Color Designation	Blue	Yellow	Red	Green
Minimum Length	46" 115 cm	42" 105 cm	36" 90 cm	32" 80cm
Minimum Flower Diameter	3.5" 8.75 cm	3.25" 8.25 cm	3.0" 7.5 cm	2.5" 6.25 cm
Stem Strength	15°	15°	15°	15°
Stem Deviation/ Curvature	2" 5 cm	2" 5 cm	3" 7.5 cm	4" 10 cm
Minimum Flowers per Stem	12	12	10	6

STAGES OF DEVELOPMENT



Stage 1

Stage 2

Stage 3

Stage 4

GLADIOLUS

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage color should be medium green to green to light green depending upon the variety.
- Foliage and stems should be free from damage caused by insects, disease, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration. (Note: occasional browning or yellowing of leaf tips might occur on certain varieties on a seasonal basis.)

FLOWERS

- Gladiolus are available in many colors and petal shapes.
- Flowers should be uniform in color and stage of openness within each bunch.
- Gladiolus flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 38-40 degrees F (3-4 degrees C) with at least 90% relative humidity.
- Gladiolus are ethylene sensitive. Postharvest STS treatments can increase the probability that more of the flowers on the spike will open.
- Gladiolus are geotropic and should be shipped and stored upright.
- Anticipated vase life in clean containers with preservative solution is a minimum of 7 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is 5, 7, or 10 stems per bunch.

GLADIOLUS

TERMINOLOGY

- Spike** - Describes the entire flower of the gladiolus which is comprised of individual florets on a central stem. Spike is synonymous with one stem of gladiolus.
- Novelty** - Generally refers to varieties of gladiolus that have flower colors other than solid red, white, pink, lavender, or orange.
- Hamper** - Descriptive name for gladiolus shipping container.
- Geotropic** - The tendency of some fresh flower stems to bend towards a vertical orientation if kept in a horizontal position.

GYPSOPHILA

(BABY'S BREATH)



PRODUCT DESCRIPTION

Gypsophila, *Gypsophila paniculata*, is a bush whose multi-branching stems feature clusters of small single or double flowers, depending on variety.

ABOUT GYPSOPHILA

Gypsophila is native to Europe, Asia, and Africa and has been naturalized in North America. The name gypsophila is from the Greek words *gypsos* (gypsum) and *philos* (loving). Common names include baby's breath and gyp. The cultivars "Perfecta" and "Bristol Fairy" make up the majority of commercial production.

Today, gypsophila is supplied to the U.S. floriculture industry primarily from these production areas: California, Ecuador, Peru, the Netherlands, and Israel.

GYPSOPHILA

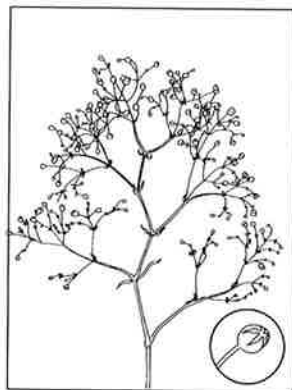
(BABY'S BREATH)

DIMENSIONS

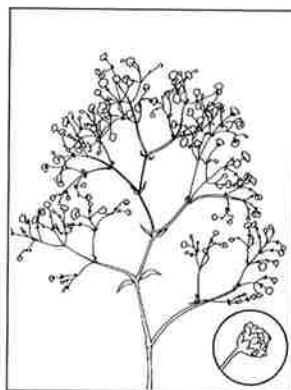
Note: Stem strength should be measured after hydration.

Grade	1	2	3	4
Color Designation	Blue	Yellow	Red	Green
Minimum Length	26" 65 cm	22" 55 cm	18" 45 cm	14" 35 cm
Minimum Weight per Bunch	10.5 oz 300 gm	7.5 oz 210 gm	5.5 oz 150 gm	3.0 oz 90 gm
Minimum Stems per Bunch	10	10	10	10
Minimum Laterals per Stem	3	2	2	1
Stem Strength	5°	5°	5°	5°
Stem Deviation/ Curvature	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	NA	NA	NA	NA

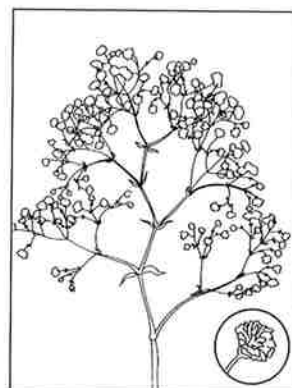
STAGES OF DEVELOPMENT



Stage 1



Stage 2



Stage 3

GYPSOPHILA

(BABY'S BREATH)

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage is often removed prior to packing.
- Stems should be light to dark green depending on the variety.
- Field grown gypsophila feature darker green stems than greenhouse grown gypsophila.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Gypsophila is available in single or double forms, both in white or light pink.
- Flowers may exhibit "pinking."
- Flowers should be free from discoloration, burning, and damage caused by insects, disease, and chemical residues.

GENERAL

- Physical characteristics vary by variety and method grown.
- Recommended storage temperature range is 35-40 degrees F (2-5 degrees C) with at least 90% relative humidity.
- Gypsophila are ethylene sensitive. Postharvest STS treatments can enhance vase-life and reduce ethylene damage.
- Anticipated vase life in clean containers with preservative solution is a minimum of 5 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Refer to the dimensional chart for generally accepted grade and weight per bunch specifications.

GYPSOPHILA

(BABY'S BREATH)

TERMINOLOGY

Pinking - A pink coloration in the flower caused by cool growing temperatures.

HYBRID LILIES



PRODUCT DESCRIPTION

Lilium hybrids are perennial, leafy-stemmed plants that feature 3 or more star- or trumpet-shaped flowers at the top of each stem.

ABOUT HYBRID LILIES

Hybrid lilies are native to the northern temperate zones, with many coming from Asia. The numerous forms and colors from hybridization are generally divided into two groups: asiatic and oriental hybrid lilies. The oriental lilies often have downward facing flowers and are typically larger and more fragrant than the asiatic hybrids. However, the asiatic hybrids, which have predominantly upward facing flowers, feature a broader selection of colors.

Lilies are supplied throughout the year, with peak production coming during the summer months. Bulbs are the basic material for the cultivation of the flower, with most bulbs coming from The Netherlands.

Today, lilies are supplied to the U.S. floriculture industry primarily from these production areas: Colombia, The Netherlands, and the northwest United States.

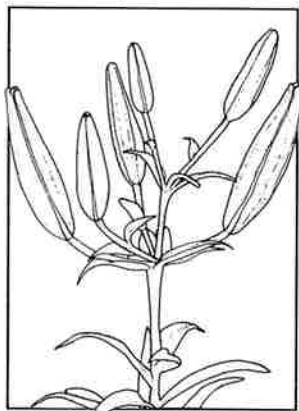
HYBRID LILIES

DIMENSIONS

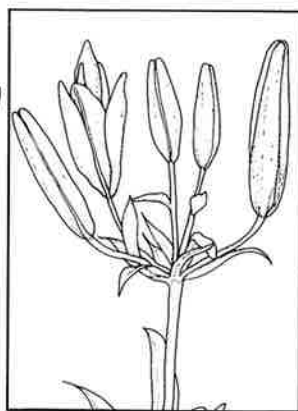
Note: Due to varietal differences and climatic conditions in the various growing areas, flower diameter and flower count may vary.

Grade	1	2	3	4	5
Color Designation	Blue	Yellow	Red	Green	Orange
Minimum Length	24" 60 cm	24" 60 cm	22" 55 cm	20" 50 cm	16" 40 cm
Minimum Flower Diameter	4" 10 cm	4" 10 cm	4" 10 cm	3" 7.5 cm	2.5" 6.25 cm
Stem Strength	12°	12°	12°	12°	12°
Stem Deviation/ Curvature	0"	0"	1/2"	1"	1"
Minimum Flowers per Stem	6	4	3	3	1

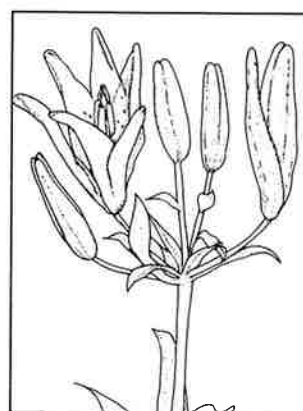
STAGES OF DEVELOPMENT



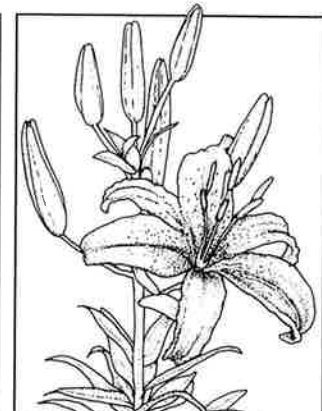
Stage 1



Stage 2



Stage 3



Stage 4

HYBRID LILIES

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage color should be dark green.
- The length of the leaves will vary depending on the variety, but they will always be parallel and veined.
- Foliage and stem should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.
- The bottom 25% of the stem should be free of leaves.

FLOWERS

- Lilies are available in many colors.
- The flower consists of 3 true petals and 3 sepals which lie immediately behind the petals.
- Stems should not be cut with the buds completely green since this can result in the flowers not fully opening. Cutting and shipping the flower when it is too open will result in damage during transit.
- Some varieties are speckled with black or brown in the trumpet.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 80% relative humidity.
- Lilies are ethylene sensitive. Postharvest STS treatments can enhance shelf-life and reduce ethylene damage.
- Symptoms of ethylene damage may include rapid aging, bud desiccation, translucent flower petals, and poor shelf life.
- Anticipated vase life in clean containers with preservative solution is a minimum of 7 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Lilies are generally sold in 10 stem bunches. Occasionally, certain varieties may be sold in 5 stem bunches.

HYBRID LILIES

TERMINOLOGY

- Blasting -** Death of young or well-developed flower buds, also known as bud abortion, which can be caused by a variety of environmental factors during production or post-harvest.
- Bud Desiccation -** Flower buds that shrivel, discolor, or fail to open.
- Leaf Scorch -** Occurs just before the buds become visible on newly unfolding leaves. Some varieties will show a “purpling” of affected leaves.

HYBRID TEA ROSES



PRODUCT DESCRIPTION

Hybrid tea roses, *Rosa hybrida*, sold commercially as cut flowers are cut from specially bred and selected varieties of rose plants. They are disbudded to a single flower per stem.

ABOUT HYBRID TEA ROSES

Roses are native to the United States, and 35-million-year-old fossils have been found in North America. In 1986, the rose was designated by Congress as the official flower of the United States. There are 3 main types of roses commercially available as fresh cut flowers: hybrid tea, sweetheart, and spray roses.

The United States' most famous rose breeder was George Washington, who named one of his varieties after his wife. The "Martha Washington" rose is still grown today as a garden variety.

Today, hybrid tea roses are supplied to the U.S. floriculture industry primarily from these production areas: California and Colombia.

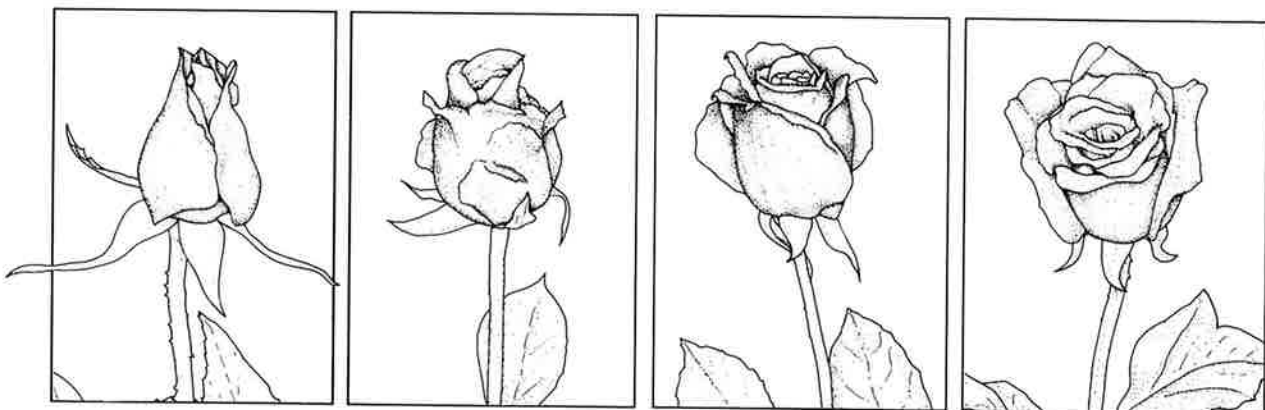
HYBRID TEA ROSES

DIMENSIONS

Note: Due to varietal and climatic conditions in the various growing areas, flower diameter may vary.

Grade	1	2	3	4	5	6	7	8	9	10
Color Designation	Blue	Yellow	Red	Green	Orange	Violet	White	Light Blue	Grey	Brown
Minimum Length	28" 70 cm	26" 65 cm	24" 60 cm	22" 55 cm	20" 50 cm	18" 45 cm	16" 40 cm	14" 35 cm	12" 30 cm	10" 25 cm
Minimum Flower Diameter	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stem Strength	20°	20°	20°	20°	20°	20°	20°	20°	20°	20°
Stem Deviation/ Curvature	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm	3/4" 2 cm	3/4" 2 cm	3/4" 2 cm	1/2" 1.5 cm	1/2" 1.5 cm	1/2" 1.5 cm	1/2" 1.5 cm
Minimum Flowers per Stem	1	1	1	1	1	1	1	1	1	1

STAGES OF DEVELOPMENT



Stage 1

Stage 2

Stage 3

Stage 4

HYBRID TEA ROSES

CHARACTERISTICS

STEMS/FOLIAGE

- Stems and foliage on the upper 2/3 of the stem should be light to dark green.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free of physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, or discoloration. (Note: occasional browning or yellowing of leaf edges might occur on certain varieties on a seasonal basis.)

FLOWERS

- Hybrid tea roses are available in many colors.
- Flowers should be uniform in color, size, and stage of openness within each bunch.
- Flowers and calyx should be free from discoloration and burning.
- There should be no bullheads.
- Hybrid tea rose flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.
- Guard petals may appear bruised or discolored but should not be removed until processed for the ultimate consumer.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 80% relative humidity.
- Some rose cultivars are sensitive to external ethylene sources.
- Number of thorns vary greatly depending on variety.
- Roses dehydrate easily; proper hydration can greatly reduce bent-neck.
- Anticipated vase life in clean containers with preservative solution is a minimum of 4 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is 20 or 25 stems per bunch.

HYBRID TEA ROSES

TERMINOLOGY

- Bent Neck -** The portion of the stem immediately below the flower becomes limp causing the flower to bend to one side. Caused by lack of water uptake by the stem.
- Hydration -** Placing roses in a special solution with a pH of 4.0 to 4.5 that will enhance their absorption of water.
- Blown Head -** A flower which is overmature or excessively open.
- Bullhead -** A flower that has overlapping petals in the center of the flower bud. Usually, outer petals will open to reveal the “ball” shaped center of overlapping or interlocked petals.
- Guard Petal -** The outermost petals on a flower bud which provide natural protection to the flower. These can sometimes be damaged in handling and can be removed just prior to sale to the consumer without detracting from the value of the flower.

IRIS



PRODUCT DESCRIPTION

Iris, *Iris* hybrids, are bulbous plants that have sword-shaped leaves and flowers composed of 6 petals in various colors. The 3 upright petals are called standards and the 3 that hang down are called falls.

ABOUT IRIS

Originating in the Mediterranean region and southern Europe, the iris was considered a symbol of power by the ancient Egyptians. The Greeks named it after Iris, their goddess of the rainbow. The Fleur-de-Lis, a stylized iris motif, has symbolized France since the 13th century.

Today, irises are supplied to the U.S. floriculture industry primarily from these production areas: California, Washington, and The Netherlands.

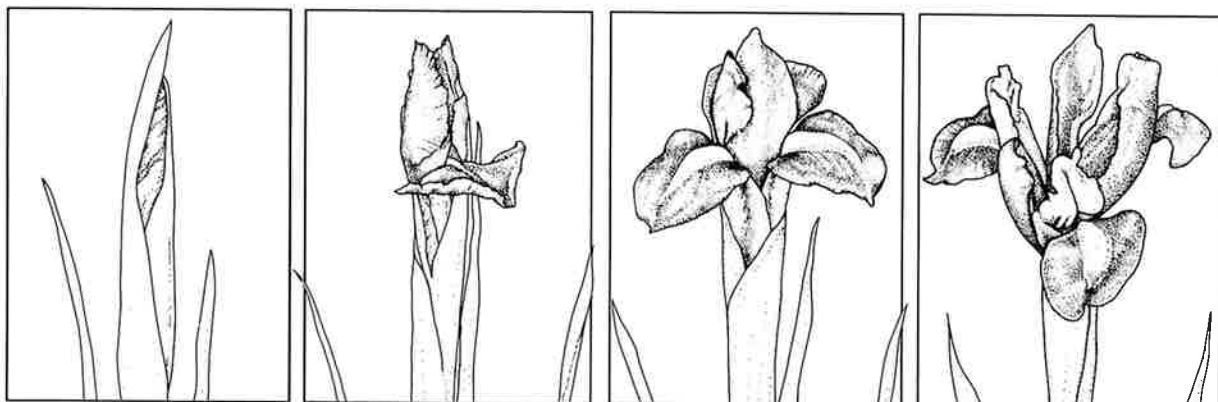
IRIS

DIMENSIONS

Note: Due to varietal differences and climatic conditions in the various growing areas, flower length may vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	24" 60 cm	18" 45 cm	14" 35 cm
Minimum Flower Diameter	N/A	N/A	N/A
Stem Strength	10°	10°	10°
Stem Deviation/ Curvature	1/2" 2 cm	1/2" 2 cm	1/2" 2 cm
Minimum Flowers per Stem	1	1	1

STAGES OF DEVELOPMENT



Stage 1

Stage 2

Stage 3

Stage 4

IRIS

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage should be bluish-green to green to grayish-green depending upon the variety.
- Leaves may vary from a slight wave to straight leaves.
- Foliage and stems should be free from damage caused by insects, diseases and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.
- Whitish residue on leaves is natural, not pesticide residue.

FLOWERS

- Iris are available in many colors and bi-colors.
- Flowers should be uniform in stage of color within each bunch.
- Flowers should be fully colored when shipped to assure that they will open.
- Iris flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 80% relative humidity.
- Anticipated vase life in clean containers with preservative solution is a minimum of 3 days at normal room temperature of 68-72 degrees F (20-22 degrees C). (Note: Not all preservatives are compatible with bulb crops.)
- Generally accepted packing is 5 or 10 stems per bunch.

IRIS

TERMINOLOGY

Falls - The 3 petals that hang down or droop in an iris flower.

Standards - The 3 petals that are upright in an iris flower.

LIATRIS



PRODUCT DESCRIPTION

Liatris, *Liatris* spp., flower stems consist of numerous florets whorled around a terminal spike.

ABOUT LIATRIS

Liatris are native to North America, where about 40 species of perennial liatris grow. However, a species from South Africa, *Liatris callilepsis*, is the most commonly available species for commercial production. Common names for liatris include gayfeather, blazing star, and button snakeroot.

Today, liatris is supplied to the U.S. floriculture industry primarily from these production areas: California, Chili, Costa Rica, Israel, Kenya, and South Africa.

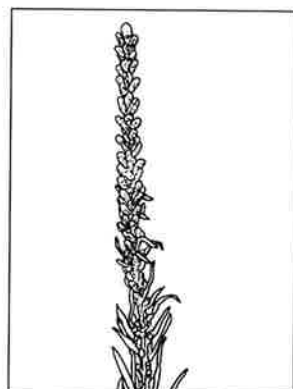
LIATRIS

DIMENSIONS

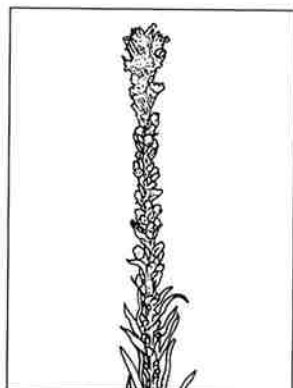
Note: Due to varietal differences the spike length may vary.

Grade	1	2	3	4
Color Designation	Blue	Yellow	Red	Green
Minimum Length	36" 90 cm	32" 80 cm	28" 70 cm	20" 50 cm
Minimum Spike Diameter	7" 18 cm	6" 15 cm	5" 12 cm	4" 10 cm
Stem Strength	5°	5°	5°	5°
Stem Deviation/ Curvature	1/2" 1.25 cm	1/2" 1.25 cm	1/2" 1.25 cm	1/2" 1.25 cm
Minimum Flowers per Stem	NA	NA	NA	NA

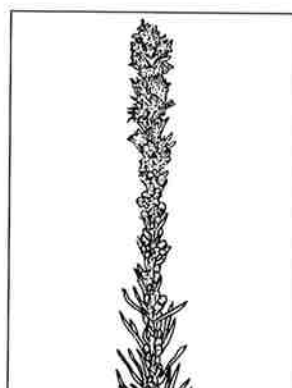
STAGES OF DEVELOPMENT



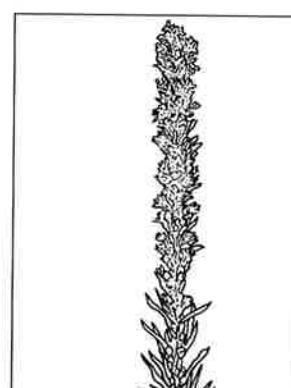
Stage 1



Stage 2



Stage 3



Stage 4

LIATRIS

CHARACTERISTICS

STEMS/FOLIAGE

- Narrow, dark green foliage covers the entire stem and flower spike.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Liatris are available in various shades of purple and white.
- Florets begin to mature from the top of the spike and continue to open to the base of the spike.
- Flowers should be uniform in color and stage of openness within each bunch.
- Flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 35-40 degrees F (2-4 degrees C) with at least 90% relative humidity.
- Tip burn or necrosis of leaf tips is common with liatris.
- Anticipated vase life in clean containers with preservative solution is a minimum of 7 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is 10 stems per bunch.

LIATRIS

TERMINOLOGY

Necrosis - Black edges on foliage. Does not effect vase life of flower.

Spike - Describes the entire flower of the liatris which is comprised of individual florets on a central stem.

LIMONIUM



PRODUCT DESCRIPTION

The spray limonium group are bushes whose long narrow multi-branching stems feature clusters of very tiny flowers.

ABOUT LIMONIUM

The spray limonium group includes all of the following: *Latifolium*, *Perezii*, *Caspia*, and *Otolepis*. *Latifolium*, the most common species is native to the dry grasslands from south eastern Europe to southeastern Russia. It was first cultivated in Great Britain in 1791. *Latifolium* is also commercially grown for drying. *Perezii* is native to the Canary Islands; *Caspia* can be found from the Mediterranean region to England; and *Otolepis* is native to Central Asia.

Today, limonium is supplied to the U.S. floriculture industry primarily from these production areas: California, Colombia, Ecuador, Israel, and Mexico.

LIMONIUM

DIMENSIONS

Note: Due to climatic conditions in the various growing regions and plant maturity at harvest, the weight per bunch may vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	28" 70 cm	24" 60 cm	20" 50 cm
Stem Strength	25°	25°	25°
Stem Deviation/ Curvature	2" 5 cm	2" 5 cm	2" 5 cm
Minimum Weight per Bunch	10.5 oz 300 gm	10.0 oz 280 gm	9.0 oz 250 gm
Minimum Stems per Bunch	5	7	10
Minimum Flowers per Bunch	NA	NA	NA

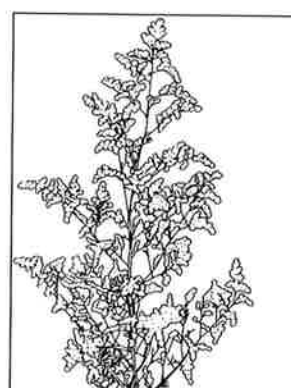
STAGES OF DEVELOPMENT



Stage 1



Stage 2



Stage 3

LIMONIUM

CHARACTERISTICS

STEMS/FOLIAGE

- Limonium is generally shipped without foliage, although some fine lacy foliage may appear on the stems.
- Stems should be woody.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Limonium is available in blue, lavender, pink, and white.
- Flowers are very tiny and clustered at the ends of the laterals.
- Flower clusters should be on the top $\frac{1}{2}$ of the laterals.
- Flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Some varieties may have a slight odor when kept in a confined space.
- Recommended storage temperature is 40 degrees F (5 degrees C) with at least 90%.
- Anticipated vase life in clean containers with preservative solution is a minimum of 10 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Refer to the dimensional chart for generally accepted grade and weight per bunch specifications.

LIMONIUM

TERMINOLOGY

To date there are no terms specific to limonium.

MINIATURE CARNATIONS



PRODUCT DESCRIPTION

Miniature or spray carnations, *Dianthus caryophyllus*, have multiple laterals in a spray formation with one or more flowers per lateral.

ABOUT MINIATURE CARNATIONS

Miniature carnations are grown in such a way as to allow the stems of the carnation plant to develop multiple flowers in a spray fashion.

Miniature carnations for commercial growing were developed by Professor Henry Thompson from the University of Connecticut. Miniature carnations grew in popularity in North America through the 1980s and 1990s. There are over 200 varieties of miniature carnations grown as fresh cut flowers, and several popular cultivars feature flowers with a distinctive clove fragrance.

Today, miniature carnations are supplied to the U.S. floriculture industry primarily from these production areas: California, Colorado, and Colombia.

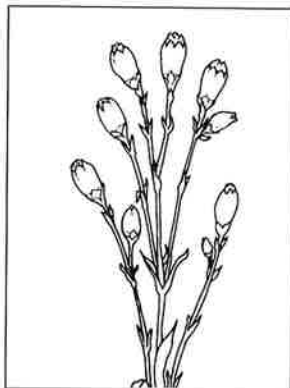
MINIATURE CARNATIONS

DIMENSIONS

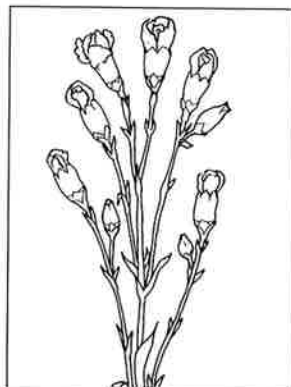
Note: Due to varietal differences, the number of flowers per stem may vary.

Grade	1	2	3	4
Color Designation	Blue	Yellow	Red	Green
Minimum Length	24" 60 cm	22" 55 cm	20" 50 cm	18" 45 cm
Stem Strength	35°	35°	35°	35°
Stem Deviation/ Curvature	1 1/2" 4 cm	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	5	4	3	4

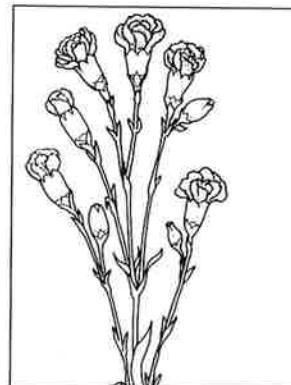
STAGES OF DEVELOPMENT



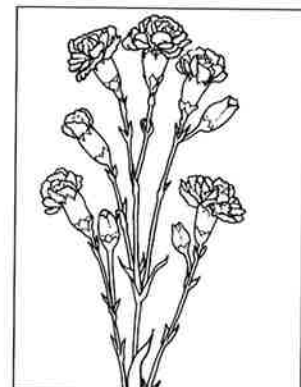
Stage 1



Stage 2



Stage 3



Stage 4

MINIATURE CARNATIONS

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage color should be green, bluish-green, or grayish-green depending upon the variety.
- Leaves may vary from a slight wave to a tight curl.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Miniature carnations are available in many solid colors as well as bi-colors.
- Flower development will vary on a single stem.
- Calyx should not be split.
- Flowers should be free from sleepy characteristics.
- Flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 90% relative humidity.
- Miniature carnations are ethylene sensitive. Postharvest STS treatments can enhance shelf-life and reduce ethylene damage.
- Anticipated vase life in clean containers with preservative solution is a minimum of 10 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is 8 or 10 stems per bunch.

MINIATURE CARNATIONS

TERMINOLOGY

- Novelty -** Generally refers to varieties of miniature carnations that have flower colors other than solid red, white, or pink.
- Sleepy -** Flowers that do not open completely as a result of exposure to excessive quantities of ethylene gas. Symptoms may include reverse curl of individual inner petals. Miniature carnations cut too tight may also be the reason for sleepiness.
- Split Calyx -** When the outer group of flower leaves, which are green in color and smaller than the inner leaves or petals, are torn or cracked.
- Spray -** Describes a flower stem where all flowers are allowed to develop.

POMPONS

(Spray Chrysanthemums)



PRODUCT DESCRIPTION

Pompons, or spray chrysanthemums, *Dendranthema grandiflora*, have multiple laterals with one or more flowers per lateral.

ABOUT POMPONS

Pompons, a member of the chrysanthemum family, became popular in the 1800s in France. The small rounded flowers got their name because of their similarity to the small wool pompons found on French soldiers' hats.

Pompons were first introduced to the United States in 1798. By 1850, there were as many as forty varieties grown. Today, there are hundreds of varieties of pompons in a number of colors and flower and petal shapes. The daisy pompon (*photo*), for example, has both the disc and outer ray petals which make up its shape.

Today, pompons are supplied to the U.S. floriculture industry primarily from these production areas: California, Canada, Colombia, and Florida.

POMPONS

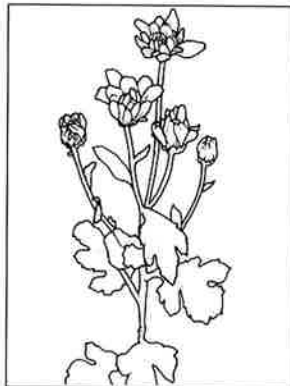
(Spray Chrysanthemums)

DIMENSIONS

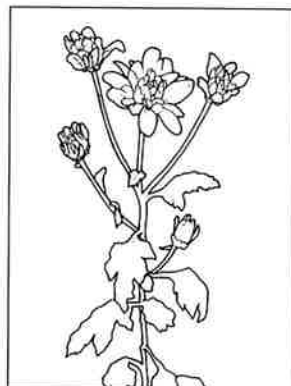
Note: Due to varietal differences, the number of flowers per stem may vary.

Grade	1	2
Color Designation	Blue	Yellow
Minimum Length	30" 75 cm	30" 75 cm
Stem Strength	25°	25°
Stem Deviation/ Curvature	1/2" 1.25 cm	1/2" 1.25 cm
Minimum Length of Laterals	6" 15 cm	3.5" 9 cm
Mimimum Laterals at Above Length	3	4
Minimum Flowers per Stem	5	6

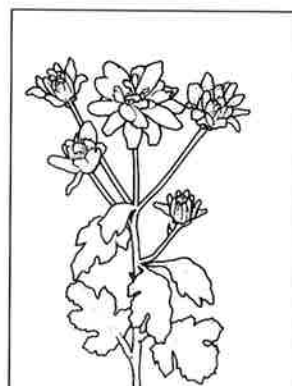
STAGES OF DEVELOPMENT



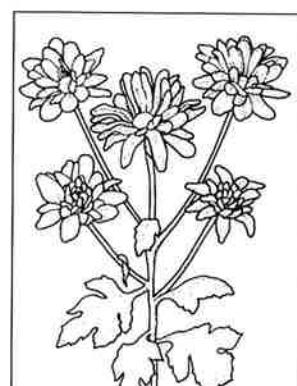
Stage 1



Stage 2



Stage 3



Stage 4

POMPONS

(Spray Chrysanthemums)

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage should be deep green.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Pompons are available in many colors, petal and flower shapes.
- Flower maturity will vary on a single stem.
- Flower diameter will vary from $\frac{3}{4}$ " to 3" depending on the variety.
- Pompon flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 90% relative humidity.
- Anticipated vase life in clean containers with preservative solution is a minimum of 10 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is in bunches; bunch size is determined by the number of flowers per stem.

POMPONS

(Spray Chrysanthemums)

TERMINOLOGY

- Anemone -** A flower form that is similar to a daisy except the center is larger, forming a cushion that is surrounded by flower petals.
- Cushion -** A flower form that has no discernible “eye” and consists of only one type of petal.
- Daisy -** A flower form that is comprised of two different kinds of petals, outer ray petals and disc petals that make up the “eye” of the daisy.
- Quill Tipped -** Shape of the outer petal of the anemone bloom.
- Ray Petal -** The outer petal of a bloom.
- Spider -** Chrysanthemum & pompon flower form that features petals that are tubular and elongated in the outer rows but short in the center of the flower. The drooping outer row of petals are sometimes hooked on the ends.
- Spoon -** Chrysanthemum & pompon flower form similar to the quill except the outer row petals are open and flattened, resembling a spoon.

SOLIDASTER



PRODUCT DESCRIPTION

Solidaster, *x solidaster luteus*, is a bush whose multi-branching stems feature clusters of tiny yellow flowers.

ABOUT SOLIDASTER

Solidaster, commonly called golden aster, is an inter-generic hybrid, meaning the result of crossing *aster* and *solidago*. The structure of the solidaster comes from the *aster*, and its yellow color comes from the *solidago*. Although both of the parent plants are native to North America, the cross breeding originated in Lyon, France around 1910.

Today, solidaster is supplied to the U.S. floriculture industry primarily from these production areas: California, Colombia, Israel, and Mexico.

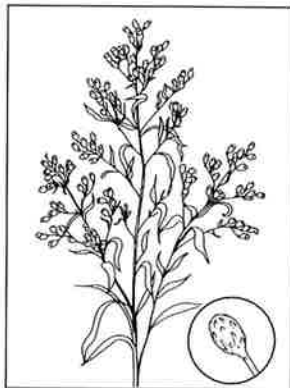
SOLIDASTER

DIMENSIONS

Note: Due to climatic conditions in the various growing regions and plant maturity at harvest, the weight per bunch may vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	28" 70 cm	24" 60 cm	20" 50 cm
Minimum Stems per Bunch	10	10	10
Minimum Weight per Bunch	10.5 oz 300 gm	9.0 oz 250 gm	8.0 oz 225 gm
Stem Strength	10°	10°	10°
Stem Deviation/ Curvature	1" 2.5 cm	1/2" 1.25 cm	1/2" 1.25 cm
Minimum Flowers per Stem	NA	NA	NA

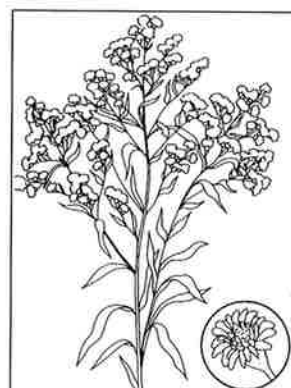
STAGES OF DEVELOPMENT



Stage 1



Stage 2



Stage 3

SOLIDASTER

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage should be light green and narrow in form.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.
- Some foliage may be removed prior to shipping.

FLOWERS

- Solidaster is yellow.
- Flowers should be 1/8" - 1/4" in diameter and are clustered together near the top 1/4 of the lateral.
- Flower development will vary on the stem.
- The greatest proportion of florets should be evenly distributed in the top 1/2 of the bunch.
- Flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, and time of year.
- Recommended storage temperature range is 36-38 degrees F (2-5 degrees C) with at least 85% relative humidity.
- Solidasters are ethylene sensitive. Postharvest STS treatments can enhance shelf life and reduce ethylene damage.
- Anticipated vase life in clean containers with preservative solution is a minimum of 5 days at normal room temperature of 68-72 degrees F (20-22 degrees C).
- Refer to the dimensional chart for generally accepted grade and weight per bunch specifications.

SOLIDASTER

TERMINOLOGY

To date there are no terms specific to solidaster.

SPRAY ROSES



PRODUCT DESCRIPTION

Spray roses, *Rosa hybrida*, are sold commercially as cut flowers and are cut from specially bred and selected varieties of rose plants. They are grown to produce multiple flowers per stem.

ABOUT SPRAY ROSES

Spray roses originated in Holland and are the result of cross breeding standard roses. Originally a field crop, spray roses were later established as a greenhouse crop for mass production. Today there are numerous varieties of spray roses.

Today, spray roses are supplied to the U.S. floriculture industry primarily from these production areas: California, Colombia, and Ecuador.

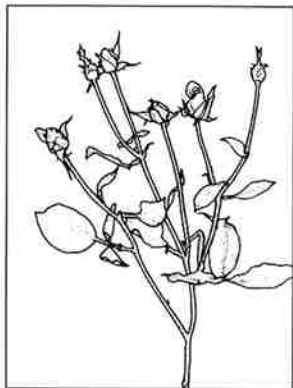
SPRAY ROSES

DIMENSIONS

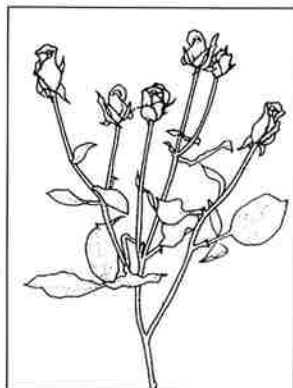
Note: Due to varietal differences, flower count per stem may vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	24" 60 cm	20" 50 cm	16" 40 cm
Minimum Flower Diameter	NA	NA	NA
Stem Strength	20°	20°	20°
Stem Deviation/ Curvature	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	4	3	3

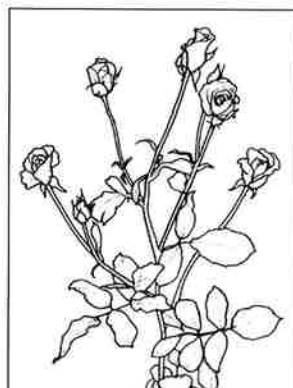
STAGES OF DEVELOPMENT



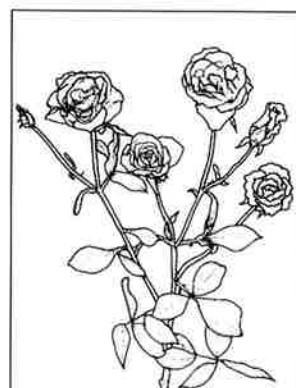
Stage 1



Stage 2



Stage 3



Stage 4

SPRAY ROSES

CHARACTERISTICS

STEMS/FOLIAGE

- Stems and foliage on the upper 2/3 of the stem should be light to dark green.
- Size and structure of leaves will vary depending on the variety.
- Number of thorns varies greatly depending on variety.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free of physical damage (bruises, and breakage) including spots, holes, rotted tissue, wilting, or discoloration.

FLOWERS

- Spray roses are available in many solid colors as well as bi-colors.
- Bud development will vary on a single stem.
- Guard petals may appear bruised or discolored but should not be removed until processed for the ultimate consumer.
- Spray rose flowers and calyx should be free from discoloration, burning, and physical damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics may vary by grower, region, and variety.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 90% relative humidity.
- Some rose cultivars are sensitive to external ethylene sources.
- Roses dehydrate easily; proper hydration can greatly reduce bent-neck.
- Anticipated vase life in clean containers with preservative solution is a minimum of 4 days at normal room of temperature 68-72 degrees F (20-22 degrees C).
- Generally accepted packing is 10 stems per bunch.

SPRAY ROSES

TERMINOLOGY

- Bent Neck -** The portion of the stem immediately below the flower becomes limp causing the flower to bend to one side. Caused by lack of water uptake by the stem.
- Blown Head -** A flower which is over mature or excessively open.
- Bullhead -** A flower that has overlapping petals in the center of the flower bud. Usually, outer petals will open to reveal the “ball” shaped center of overlapping or interlocked petals.
- Guard Petal -** The outermost petals on a flower bud which provide natural protection to the flower. These can sometimes be damaged in handling and can be removed just prior to sale to the consumer without detracting from the value of the flower.
- Hydration -** The absorption of water through the cut flower stem.
- Spray -** Describes a flower stem where all flowers are allowed to develop.

STATICE



PRODUCT DESCRIPTION

Statice, *limonium sinuatum*, is a multi-branching stem that feature small white flowers inside colored bracts that are clustered at the ends of the lateral branches.

ABOUT STATICE

Statice, sometimes called English statice, is native to the Mediterranean area and the Canary Islands. It is a perennial in its native habitat and has colored bracts which hold a white flower. There are a number of varieties of statice, and it is often grown commercially for drying. Among those varieties is German statice, from the species *Limonium latifolium*, which has very small white flowers with mauve or purplish centers.

Today, statice is supplied to the U.S. floriculture industry primarily from these production areas: California, Colombia, Ecuador, Israel, and Mexico.

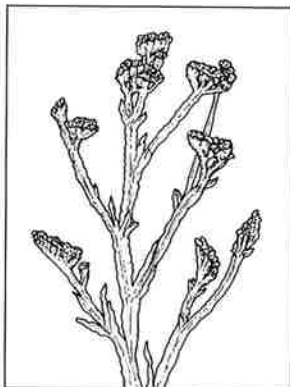
STATICE

DIMENSIONS

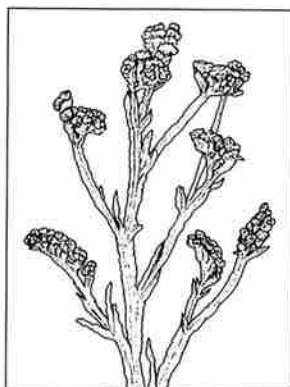
Note: Due to varietal differences, minimum weight for novelty colors will vary.

Grade	1	2	3
Color Designation	Blue	Yellow	Red
Minimum Length	24" 60 cm	20" 50 cm	20" 50 cm
Minimum Stems per Bunch	10	10	10
Minimum Weight per Bunch	14.0 oz 400 gm	8.0 oz 230 gm	5.0 oz 150 gm
Stem Strength	20°	15°	15°
Stem Deviation/ Curvature	1" 2.5 cm	1" 2.5 cm	1" 2.5 cm
Minimum Flowers per Stem	NA	NA	NA

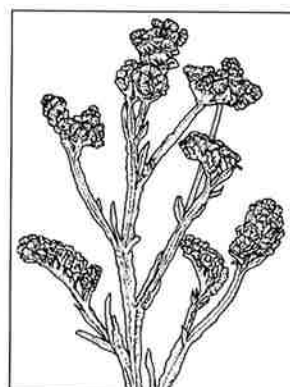
STAGES OF DEVELOPMENT



Stage 1



Stage 2



Stage 3

STATICE

CHARACTERISTICS

STEMS/FOLIAGE

- “Winged” foliage may cover the entire stem; however, some varieties do not have this type of foliage on stems.
- Foliage is thin, elongated, and wavy.
- Foliage and stems should be free from damage caused by insects, diseases, and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.

FLOWERS

- Statice is available in hues of purple, blue, rose, yellow, and white.
- Colored bracts, generally referred to as the flower, are clustered on the top of the stems. They hold the true small white or yellow flower.
- Bracts are 1/8” - 1/4” in diameter.
- Flowers should be free from discoloration, burning, and damage caused by insects, diseases, and chemical residues.

GENERAL

- Recommended storage temperature is 40 degrees F (5 degrees C) with at least 90% relative humidity.
- Anticipated vase life in clean containers with preservative solution is a minimum of 10 days at normal room temperature of 86-72 degrees F (20-22 degrees C).
- Generally accepted packing is 10 stems per bunch and in ounces or grams per bunch.

STATICE

TERMINOLOGY

To date there are no terms specific to statice.

TULIPS



PRODUCT DESCRIPTION

Tulips, *Tulipa hybrida*, are flowers from bulbs of various classes including double petals and bi-colors.

ABOUT TULIPS

Tulips originated in a broad area from the Mediterranean to China. They were introduced in The Netherlands in the late 1500s. For the past 400 years, they have been hybridized extensively.

Today, tulips are supplied to the U.S. floriculture industry from these production areas: California, Washington, Oregon, and The Netherlands.

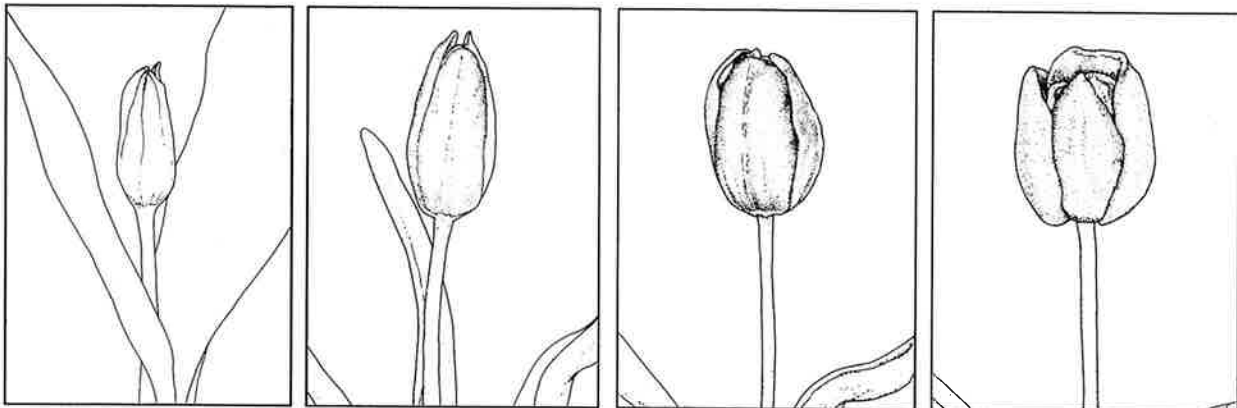
TULIPS

DIMENSIONS

Note: Stem strength and stem deviation should be measured after hydration.

Grade	1	2
Color Designation	Blue	Yellow
Minimum Length	18" 46 cm	12" 30.5 cm
Minimum Flower Diameter	NA	NA
Stem Strength	NA	NA
Stem Deviation/ Curvature	1/2" 2 cm	1/2" 2 cm
Minimum Flowers per Stem	1	1

STAGES OF DEVELOPMENT



Stage 1

Stage 2

Stage 3

Stage 4

TULIPS

CHARACTERISTICS

STEMS/FOLIAGE

- Foliage color should be bluish-green to green to grayish-green depending upon the variety.
- Leaves may vary from a slight wave to straight leaves.
- Foliage and stems should be free from damage caused by insects, diseases and chemical residues. They should also be free from physical damage (bruises and breakage) including spots, holes, rotted tissue, wilting, burning, or discoloration.
- Stems of cut tulips may naturally elongate or continue to grow when placed in water at room temperature.
- Whitish residue on leaves is natural, not pesticide residue.

FLOWERS

- Tulips are available in many colors and bi-colors and with various petal shapes.
- Flowers should be uniform in stage of color within each bunch.
- Flowers should be free from discoloration, burning, damage caused by insects, diseases, and chemical residues.

GENERAL

- Physical characteristics vary by grower, region, variety, and time of year.
- Recommended storage temperature range is 33-36 degrees F (1-3 degrees C) with at least 80% relative humidity.
- Anticipated vase life in clean containers with preservative solution is a minimum of 3 days at normal room temperature of 68-72 degrees F (20-22 degrees C). (Note: Not all preservatives are compatible with bulb crops.)
- Generally accepted packing is 5 or 10 stems per bunch.

TULIPS

TERMINOLOGY

- Field Grown -** Tulips that are grown outdoors and harvested through the spring months. Characterized by shorter, stockier stems and foliage that may exhibit blemishes due to exposure to weather.
- French -** Varieties that feature generally larger plants and flowers.
- Greenhouse -
Grown** Tulips that are grown under carefully controlled conditions in a greenhouse and are available year-round. Characterized by longer, softer stems and foliage that is generally free of blemishes.
- Hydration -** Stems are placed in 6-8 inches (15-20 cm) of tepid water. Flowers are tightly wrapped to prevent permanent stem bending and held at room temperature until stems are turgid.
- Parrot -** Varieties that feature flowers with fringed or ruffled petals.

Glossary

- Anemone -** A chrysanthemum and pompon flower form that is similar to a daisy except the center is larger, forming a cushion that is surrounded by flower petals.
- Bent Neck -** The portion of the stem immediately below the flower becomes limp, causing the flower to bend to one side. Caused by lack of water uptake by the stem.
- Biocide -** A chemical that will kill bacteria and other microorganisms that live and grow in containers of fresh cut flowers.
- Blasting -** Death of young or well-developed flower buds. Also known as bud abortion. Can be caused by a variety of environmental factors during production or post-harvest.
- Bloom -** A portion of the flower that includes the petal and calyx.
- Blown Head -** A flower which is overmature or excessively open.
- Botrytis -** A disease which produces dark brown lesions on the leaves or flower petals. They grow into round or oval spots with conspicuous margins visible on both sides of the leaf.
- Bract -** The outer sheath which holds the florets.
- Bud Desiccation -** Flower buds that shrivel, discolor, or fail to open.
- Bullhead -** A flower that has overlapping petals in the center of the flower bud. Usually, outer petals will open to reveal the “ball” shaped center of overlapping or interlocked petals.
- Butterfly Type - (Alstroemeria)** Varieties of alstroemeria which have shorter stems. The crown of peduncles is typically more uniform in length.
- Butterfly Type - (Anthurium)** A variety of anthurium which has a small butterfly-shaped spathe.
- Butterfly Type - (Spray Asters)** General term used to refer to *novi-belgii* asters.

- Calyx -** The outer protective covering of a flower, composed of a series of leaflike, usually green sepals.
- Cards -** Chipboard material with slots to hold gerberas for shipping.
- Cremon -** A disbudded chrysanthemum anemone flower form.
- Cup -** A protective cover placed over the flower to prevent physical damage during shipping.
- Cushion -** A pompon flower form that has no discernible “eye” and consists of only one type of petal.
- Daisy -** A pompon flower form that is comprised of two different kinds of petals, outer ray petals and disc petals that make up the “eye” of the daisy.
- Disbudding -** Removal of all flower buds except the terminal one to allow one flower to develop per stem.
- Ethylene -** An odorless, colorless gas that decreases cut flowers’ longevity. It is produced by aging plant tissues, such as ripening fruit and aging flowers.
- Falls -** The three petals that hang down or droop in an iris flower.
- Field Grown - Tulips** Tulips that are grown outdoors and harvested through the spring months. Characterized by shorter, stockier stems, and foliage that may exhibit blemishes due to exposure to weather.
- Floret -** A small flower which is usually grouped with other florets to form a larger flower mass.
- French -** Tulip varieties that generally feature larger plants and flowers.
- Fuji -** Chrysanthemum flower form similar to the spider except the petals may be shorter, droop less, and lack hooks on the ends.
- Geotropic -** The tendency of some fresh flower stems to bend towards a vertical orientation if kept in a horizontal position.

Greenhouse - Grown	Cut flowers that are grown under carefully controlled conditions in a greenhouse and are available year-round.
Guard Petal -	The outermost petals on a flower bud which provide natural protection to the flower. These can sometimes be damaged in handling and can be removed just prior to sale to the consumer without detracting from the value of the flower.
Hamper -	Descriptive name for gladiolus shipping container.
Hydration -	The absorption of water through the cut flower stem.
Incurve -	Chrysanthemum flower form that is globose and formal with the individual petals curving upward and toward the top of the flower.
Lateral -	A secondary branch off of the main stem.
Leaf Scorch -	Occurs just before the buds become visible on tender areas of newly unfolding leaves. Some varieties will show a “purpling” of affected leaves.
Mickey Mouse -	A variety of anthurium which has a small- to medium-sized spathe with upper lobes that resemble ears.
Monte Casino -	<i>Aster ericoides</i> , which is often referred to as a variety of spray aster, has tiny white or purple flowers.
Necrosis -	Black edges on foliage. Does not effect vase life of flower.
Nets -	Used primarily to prevent physical damage during shipping and to reduce shipping costs by allowing more units per box.
Novelty - (Cultivars)	Generally refers to cultivars that feature unique flower colors.
Novelty - (Miniature Carnations)	Generally refers to varieties of miniature carnations that have flower colors other than solid red, white, or pink.
Obaki -	A variety of anthurium which has at least two colors on the spathe.

- Novi-Belgii -** A family of small asters of the *novi-belgii* genus.
- Orchid Type -** Varieties of alstroemeria which have longer stems, but shorter peduncles.
- Parrot -** Tulip varieties that feature flowers with fringed or ruffled petals.
- Peduncle -** Short "lateral" of 1¹/₂ - 4³/₄ inches (4-12 cm) at the top of the alstroemeria stem bearing flowers. Each peduncle may have 1-3 flowers.
- Pee Wee -** A variety of anthurium which has a spathe less than 3" wide. Also known as corsage anthurium.
- Pinking -** A pink coloration in the gypsophila flower caused by cool growing temperatures.
- Quill -** Chrysanthemum and pompon flower form that features petals that are tubular, elongated on the outside, and short near the center of the flower, resembling feather quills. Ends of petals are open and not flattened.
- Quill Tipped -** Shape of the outer petal of the anemone bloom.
- Ray Petal -** The outer petal of a bloom.
- Reflexed -** Chrysanthemum flower form that is less globose and formal than the incurve with overlapping petals that are curved downward.
- Sepals -** One of the modified, usually green, leaves form the calyx.
- Shattering -** Individual petals of the chrysanthemum separate from the flower. Usually caused by rough handling.
- Sheath -** Another term for the bract.
- Slab Side -** A flower that has failed to open symmetrically. The petals on part of the circumference are still straight up while remaining petals have opened in a normal fashion.
- Sleepy -** Flowers that do not open completely as a result of exposure to excessive quantities of ethylene gas. Symptoms may include reverse curl of individual inner petals. Carnations that are harvested with buds too tight may also be the reason for sleepiness.

- Spadix -** Elongated spike that sits above the spathe; it contains the true flowers that begin maturing at the base of the spadix.
- Spathe -** Colorful heart-shaped structure that supports that spadix. It is generally referred to as the flower.
- Spider -** Chrysanthemum & pompon flower form that features petals that are tubular and elongated in the outer rows but short in the center of the flower. The drooping outer row of petals are sometimes hooked on the ends.
- Spike -** Describes the entire flower of the gladiolus and/or liatris which is comprised of individual florets on a central stem. Spike is synonymous with one stem of gladiolus and/or liatris.
- Split Calyx -** When the outer group of flower leaves, which are green in color and smaller than the inner leaves or petals, are torn or cracked.
- Spoon -** Chrysanthemum & pompon flower form similar to the quill except the outer row petals are open and are flattened, resembling a spoon.
- Spray -** Describes a flower stem on which all flowers are allowed to develop.
- Stamen -** The pollen-producing, male reproductive organ of a flower.
- Standards -** The three petals that are upright in an iris flower.
- Straw -** A protective cover slipped over the stem to provide support as the flower hydrates.
- Suntop -** A variety of *aster ericoides*.
- Tint -** A carnation flower that has been colored by the use of an absorption dye.
- Tray -** Container that holds cards for shipping.
- Tulip Anthurium -** Varieties of anthurium that feature a round tulip-shaped spathe.
- Vase Life -** The length of time a cut flower will remain attractive when placed in water at room temperature.

Appendix A

Questions buyers may want to ask suppliers when ordering fresh cut flowers:

What varieties or cultivars are in the box?

What is the mix of colors in the box?

Has the product been treated with silver thiosulfate (STS) or some other preservative?

How many stems will be in the grower or consumer bunch?

Are there any special handling tips for this product?

Will you pack a box to our specifications (i.e., specific varieties or colors)?

In what box sizes is this product packed?

Do you provide care and handling information for the floral clerk and consumer?

How is your product shipped: by air freight or truck?

From the time the product is harvested, how many days/hours does it take for the product to reach the retailer?

Can you label your product with the appropriate UPC numbers?

What practices does your company use to ensure proper postharvest temperature control?

What flower colors do you use in your bouquets/arrangements for the various seasons?

Are you a grower, shipper, or does your company perform both functions?

What items do you grow on a year-round basis? On a seasonal basis?

What is the origin of the product?

If it is a new variety, how long has it been on the market? Do you know of any vase life or shipping problems?

Appendix B

LATIN NAME

COMMON NAME(S)

<i>Alpinia purpurata</i>	Ginger
<i>Alstroemeria</i> hybrids	Alstroemeria, Peruvian Lily
<i>Anthurium x cultorum</i>	Anthurium, Flamingo Flower, Hawaiian Heart
<i>Aster ericoides</i>	Aster Monte Casino
<i>Aster novi-belgii</i>	Spray Aster, New York Aster
<i>Callistephus chinensis</i>	Japanese Aster, Chinese Aster
<i>Dendranthema grandiflora</i>	Chrysanthemum, Mum, Pompon
<i>Dianthus caryophyllus</i>	Carnation, Mini Carnation
<i>Gerbera</i> hybrids	Gerbera, Transvaal Daisy
<i>Gladiolus</i> hybrids	Gladiolus, Sword Lily
<i>Gypsophila paniculata</i>	Baby's Breath, Gyp
<i>Iris</i> hybrids	Iris, Dutch Iris
<i>Liatris</i> spp.	Liatris, Gayfeather
<i>Lilium</i> hybrids	Oriental Lily, Asiatic Hybrid Lily
<i>Limonium sinuatum</i>	Statice
<i>Rosa</i> hybrids	Rose, Hybrid Tea Rose, Sweetheart Rose, Spray Rose
x <i>Solidaster</i>	Solidaster
<i>Strelitzia reginae</i>	Bird-of-Paradise
<i>Tulipa</i> hybrids	Tulip

COMMON NAME

Alstroemeria
Anthurium
Asiatic Hybrid Lily
Aster Monte Casino
Baby's Breath
Bird-of-Paradise
Carnation
Chinese Aster
Chrysanthemum
Dutch Iris
Flamingo Flower
Gayfeather
Gerbera
Ginger
Gladiolus
Gyp
Hawaiian Heart
Hybrid Tea Rose
Iris
Japanese Aster
Liatris
Mini Carnation
Mum
New York Aster
Oriental Lily
Peruvian Lily
Pompon
Rose
Solidaster
Spray Aster
Spray Rose
Statice
Sweetheart Rose
Sword Lily
Transvaal Daisy
Tulip

LATIN NAME

Alstroemeria hybrids
Anthurium x cultorum
Lilium hybrids
Aster ericoides
Gypsophila paniculata
Strelitzia reginae
Dianthus caryophyllus
Callistephus chinensis
Dendranthema grandiflora
Iris hybrids
Anthurium x cultorum
Liatris spp.
Gerbera hybrids
Alpinia purpurata
Gladiolus hybrids
Gypsophila paniculata
Anthurium x cultorum
Rosa hybrids
Iris hybrids
Callistephus chinensis
Liatris spp.
Dianthus caryophyllus
Dendranthema grandiflora
Aster novi-belgii
Lilium hybrids
Alstroemeria hybrids
Dendranthema grandiflora
Rosa hybrids
x Solidaster
Aster novi-belgii
Rosa hybrids
Limonium sinuatum
Rosa hybrids
Gladiolus hybrids
Gerbera hybrids
Tulipa hybrids