

SPECIFICATION



**NEBRASKA
PLASTICS
INC.**

**classification:
QUALITY CONTROL**

**date:
1/1/2006**

**rev. no.
3**

**page no.
2-4-0**

**prepared by:
L.S.**

**approved by:
R.G.**

**description: MANUFACTURING SPECIFICATIONS FOR "COUNTRY ESTATE FENCING",
PVC FENCE PROFILES. (MFG. IN ACCORDANCE WITH ASTM F 964-02)**

1. Application:

1.1 Nebraska Plastics has designed "Country Estate Fence" for use in animal confinement and/or containment, privacy and beauty fences, and land control. This specification covers the requirements set forth by Nebraska Plastics for materials and physical testing.

Note 1 - Information provided in this quality control specification has been prepared solely for the use of Nebraska Plastic's employees and "Country Estate Fence" customers.

Note 2 - All though not included in this specification, application, installation and maintenance brochures are available through the sales department.

Note 3 - Certain proprietary information is not included in this specification in regards to the extrusion process, considered a trade secret.

2. Documents (referenced): (this quality control specification is not an ASTM standard, however it uses the following ASTM Standards as reference)

- 2.1 D 256 Test methods for impact resistance of plastics and electrical insulating materials.**
- D 618 Methods of conditioning plastics and electrical insulating materials.**
- D 635 Test method for rate of burning and or extent and time of burning of self supporting plastics in a horizontal position.**
- D 638 Tensile Strength**
- D 638 Tensile Modulus**
- D 648 Deflection Temperature**
- D 695 Compressive (Yield) Strength (8,780 psi)**
- D 696 Test method for coefficient of linear thermal expansion of plastics. (4.4 x 10⁻⁵ in./in./°F)**
- D 732 Shear Strength (6,780 psi)**
- D 790 Flexural Strength (11,400 psi)**
- D 883 Standard definitions of terms relating to plastics.**
- D 1435 Practice for Outdoor Weathering of Plastics.**
- D 1600 Terminology for Abbreviated Terms Relating to Plastics.**
- D 1784 Specification for Rigid Poly (Vinyl Chloride)(PVC) Compounds and Chlorinated Poly (Vinyl Chloride)(CPVC) Compounds.**
- D 1898 Practices for Sampling of Plastics.**
- D 2152 Test for degree of fusion for extruded poly (vinyl chloride)(PVC) Pipe and molded fittings by acetone immersion.**
- D 2444 Test for impact resistance of thermoplastic pipe and fittings by means of a tup (falling weight).**
- D 3892 Practice for packaging/packing of plastics.**
- D 4216 Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) & Related PVC & Chlorinated Poly (Vinyl Chloride) (CPVC) Building Products Compound.**
- D 4226 Drop Dart Procedure A 2.51 (in.-lb/mil)**
- D 4226 Drop Dart Procedure B 4.50 (in.-lb/mil)**
- D 4726 Specification for White Rigid Poly (Vinyl Chloride) (CPVC) Compounds.**
- F 964 Standard Specification of Rigid Poly (Vinyl Chloride) (PVC) Exterior Profiles Used for Fencing.**

SPECIFICATION



**NEBRASKA
PLASTICS
INC.**

**classification:
QUALITY CONTROL**

**date:
1/1/2006**

**rev. no.
3**

**page no.
2-4-0a**

**prepared by:
L.S.**

**approved by:
R.G.**

**description: MANUFACTURING SPECIFICATIONS FOR "COUNTRY ESTATE FENCING",
PVC FENCE PROFILES. (MFG. IN ACCORDANCE WITH ASTM F 964-02)**

(TABLE I)

Designation Order No.	1	2	3	4	5
Property and Unit	Base Resin	Impact Strength (IZOD) Ft lbf/ in. of notch	Tensile Strength (PSI)	Modulus of Elasticity in Tension	Deflection Temperature Under Load
Cell Limits	1 PVC	4 23°C - 5.0 0°C - 2.0	3 6,500	4 545,000	4 71°C

3. Materials:

3.1 The PVC material used to produce "Country Estate" fence profiles are categorized by the cell class requirements as defined in ASTM D 1784.

3.2 The PVC compound used to manufacture "Country Estate" fencing profiles shall meet or exceed cell class 14344B as defined in ASTM D 1784, (sec Table I). Nebraska Plastics compound number that meets the pre-mentioned cell class is known as "3101", and is certified with SGS U.S. Testing that "3101" compound meets or exceeds cell class 14344B.

3.3 To assure weatherability "3101" compound contains 10 PPH of Titanium Dioxide for proper U.V. protection, ±.5% PPH.

3.4 "3101" compound has a minimum IZOD impact strength of 5.0 ft-lb. f/in. of notch at 23°C (73.4°F_ and 2.0 ft-lb f/in. of notch at 0°C(32°F) when tested in accordance with test method D 256.

3.5 "3101" compound, when tested in accordance with test method D 635, shall not exceed an average extent of burn of 4 in. (100mm), with an average time of burn not to exceed 10A.

Note 4 - The flammability testing data, conclusions and recommendations of test method D 635 relate solely to the measurement and description of the properties of materials, products, or systems in response to heat and flame under controlled laboratory conditions and should not be used for the description or appraisal of the fire hazard of materials, products or systems under actual fire conditions.


3.6 No rework material purchased or generated by Nebraska Plastic's production facility will be used in the manufacturing of "Country Estate" fence profiles. Virgin compound only.

3.7 "Country Estate" fence profiles are produced in white, almond, light brown, and gray. High chalking grades of Titanium Dioxide are used in white and low chalking grades in the pastel colors.

4. Physical requirements and testing procedures:

4.1 Quality and workmanship - The fencing profiles shall be free from visible cracks, holes, foreign occlusions, or other defects. The fencing profiles shall be a uniform as commercially practicable in color, opacity, density, and other physical properties.

4.2 Length, Height and Width - The nominal length, height, and width of the fencing profiles shall be as agreed upon between the purchase and Nebraska Plastics. The actual height and width shall be within ±1/16" of the nominal height and width, and the actual length shall be within ±1/4" of the nominal length. The length sample should be placed on a flat surface and measured to the nearest

SPECIFICATION			
	NEBRASKA PLASTICS INC.	classification: QUALITY CONTROL	date: 1/1/2006
		rev. no. 3	
		page no. 2-4-0b	prepared by: L.S.
description: MANUFACTURING SPECIFICATIONS FOR "COUNTRY ESTATE FENCING", PVC FENCE PROFILES. (MFG. IN ACCORDANCE WITH ASTM F 964-02)			
<p>(4.2 continued)</p> <p>1/16" with a steel tape. The average of the three samples shall be within $\pm 1/4$" of the published length with no single sample deviating more than 3/8" from the published length. For height and width, place three samples on a flat surface and measure to the nearest 1/16" with a steel tape. The average of the three samples shall be within $\pm 1/16$" of the published height and width with no single dimension deviating more than 3/32" from the published length.</p> <p>4.3 Flattening - There shall be no evidence of splitting, cracking, or breaking when the fence profiles are tested. Flatten three specimens of the fence profiles, 2" long in a suitable press between parallel plates until the distance between the plates is 40% of the width of the fence profile. In a rectangular profile the minor axis dimensions shall be the dimension which determines the compression distance. The rate of loading shall be uniform and such that the compression for evidence of splitting, cracking, or breaking. A split or crack longer than 1/32" constitutes a failure of the test.</p> <p>4.4 Acetone testing for extrusion quality - All PVC fence profiles shall not flake or disintegrate when tested in accordance with the test method D 2152.</p> <p>4.5 Impact resistance - The minimum impact resistance for PVC fence profiles shall be .75 ft lb.f per mil (.001") of thickness of the wall when tested at 32°F and 1.5 ft lb.f per mil when tested at 73.4°F when tested in accordance with test method D 2444, Sec. 4 using the "B" tup and the flat place holder B. Seven of the ten specimens tested must pass without evidence of breaking, shattering, or splitting with a split longer than 1/8" evident on the impact surface. Nebraska Plastics published minimum wall for the product shall determine the required impact level. Ten specimens will be conditioned, each 6" long, at either 73.4°F ± 3.6°F or 32°F ± 3.6°F and test with the apparatus described in ASTM D 2444, using a "B" tup and a flat plate holder to the values mentioned.</p> <p>4.6 Warp - The maximum allowable warp shall be one half of one percent (0.5%) of the length of the fence profile. The warp shall be determined when all sides of the specimen are at the same temperature. Place a full length of the specimen on a flat surface along side a straight edge which is at least as long as the specimen. Measure the space between the specimen and the straight edge to the nearest 1/16".</p> <p>4.7 Weatherability - The fence profiles shall maintain a uniform color and be free of any visual surface or structural changes such as peeling, chipping, cracking, flaking and pitting for the period of time so designated in Nebraska Plastics warranty.</p> <p>4.8 Coefficient of linear expansion - The fencing profiles shall have a coefficient of linear expansion not greater than 4.4×10^{-5} in./in./°F when tested in accordance with test method D 696.</p> <p>4.9 Color - The color of the fencing profiles shall be agreed upon between Nebraska Plastics and the purchaser. The color specified shall be uniform on the primary strate and throughout the thickness of the PVC fence profile.</p> <p>5. Marking of Fence Profiles:</p> <p>5.1 Each pallet of fence profiles shall contain at least one or more of the pre-printed Nebraska Plastics logo's to be placed in the I.D. of the profile.</p>			

SPECIFICATION



**NEBRASKA
PLASTICS
INC.**

**classification:
QUALITY CONTROL**

**date:
1/1/2006**

**rev. no.
3**

**page no.
2-4-0c**

**prepared by:
L.S.**

**approved by:
R.G.**

**description: MANUFACTURING SPECIFICATIONS FOR "COUNTRY ESTATE FENCING",
PVC FENCE PROFILES. (MFG. IN ACCORDANCE WITH ASTM F 964-02)**

5.2 The O.D. of the profile should be null and void of any markings or logos with the exception of those that the purchaser himself has chosen to do so, or as designated by code.

5.3 The boards of the pallets should be marked with the date of manufacture and shift code.