ICS® INC. LABORATORIES

Client: Tru-Vision Plastics
406 W. Horton
Brenham, TX 77833
USA

Date: 14 April 2004
Report: J1197
Issue: 2

Objective:

Contract testing to: ANSI Z87.1-2003 "Practice for Occupational and Educational Eye and Face Protection," Section 9 Faceshields, and applicable references with the exception of:

Clause 9.10 Markings

Sample(s):

1. Thirty-One (31) Replacement Faceshield Windows,
   Model No./Name: Universal Faceshield/ RV-40815 EPCLF
   ICS Sample ID: 1-X

2. Thirty (30) Headgear Bracket,
   Model No./Name: HGBC
   ICS Sample ID: 2-X

Date(s) Provided by Client: 30 January 2001
Drawing(s): Not Provided
Batch/Lot #: Not Provided
Manufacturer: Tru Vision Plastics

Procedures:

Testing protocols in accord with good laboratory practice were employed for all tests.

All tests were conducted in a standard laboratory atmosphere unless otherwise specified.

Testing procedures as specified within ANSI Z87.1 Section 14 were followed unless otherwise specified.

Samples randomly selected from the quantity provided and tested in the as-received condition unless otherwise stated.

Windows (1-X) and Headgear (2-X) were assembled as necessary per the following table:

Assembly ID	Window ID	Headgear ID	Assembly ID	Window ID	Headgear ID	Assembly ID	Window ID	Headgear ID
A1	1-1	2-1	A11	1-11	2-11	A21	1-21	2-21
A2	1-2	2-2	A12	1-12	2-12	A22	1-22	2-22
A3	1-3	2-3	A13	1-13	2-13	A23	1-23	2-23
A4	1-4	2-4	A14	1-14	2-14	A24	1-24	2-24
A5	1-5	2-5	A15	1-15	2-15	A25	1-25	2-25
A6	1-6	2-6	A16	1-16	2-16			
A7	1-7	2-7	A17	1-17	2-17			
A8	1-8	2-8	A18	1-18	2-18			
A9	1-9	2-9	A19	1-19	2-19			
A10	1-10	2-10	A20	1-20	2-20			

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Assessment Summary:

Date(s) of test(s): 20 February 2001 through 21 February 2001

9 Faceshield Requirements	**Compliant**	**Non-Compliant**
9.2 Basic Impact Testing Requirements		
9.2.1 Facesheild Frame/Crown Tests	Assessed as a high impact protector see 9.3.1	
9.2.1 Basic Impact Window Tests		
9.2.1.1Drop Ball Impact	X	
9.2.1.2Minimum Thickness	X	
9.3 High Impact Testing Requirements		
9.3.1 Faceshield Product Tests		
9.3.1.1High Mass Impact	X	
9.3.1.2High Velocity Impact	X	
9.3.1.3Penetration Test	X	
9.4 Optical Requirements for Plano Faceshield Windows		
9.4.1 Optical Qualities	X	
9.4.2 Prismatic Power	X	
9.4.3 Resolving Power	X	
9.4.4 Haze	X	
9.4.5 Transmittance	X	
9.5 Requirements for Wire-Screen Windows	Not applicable	
9.6 Flammability	X	
9.7 Corrosion Resistance	Not applicable	
9.8 Cleanability	X	
9.9 Replacement Faceshield Windows	Not applicable	
9.10 Marking	Not assessed	

Samples as assessed meet the requirement of ANSI Z87.1-2003

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Results:

9.2.2.1 Drop Ball Impact

Sample ID	Location	Pass	Fail
A24	Right Ocular	X	

9.2.2.2 Minimum Thickness

Sample ID	Measured Value	Specification	Pass	Fail
A24	1.0 mm	≥ 1.0mm	X	

9.3.1.1 High Mass Impact

Sample ID	Location	Pass	Fail
A1	Right Ocular	X	
A2	Left Ocular	X	
A3	Right Ocular	X	
A4	Left Ocular	X	

9.3.1.2 High Velocity Impact

Sample ID	Location	Velocity (m/sec)	Pass	Fail
A5	Right Ocular 15° Nasal	46.6	X	
A6	Right Ocular 0°	46.6	X	
A7	Right Ocular 15° Temporal	46.0	X	
A8	Right Ocular 30° Temporal	45.7	X	
A9	Right Ocular 45° Temporal	46.0	X	
A10	Right Ocular 60° Temporal	46.3	X	
A11	Right Ocular 75° Temporal	45.7	X	
A12	Right Ocular 90° Temporal	46.0	X	
A13	Right Ocular 90° Temporal +10 mm	45.7	X	
A14	Right Ocular 90° Temporal –10 mm	46.0	X	
A15	Left Ocular 15° Nasal	46.0	X	
A16	Left Ocular 0°	45.7	X	
A17	Left Ocular 15° Temporal	45.7	X	
A18	Left Ocular 30° Temporal	45.7	X	
A19	Left Ocular 45° Temporal	45.7	X	
A20	Left Ocular 60° Temporal	45.4	X	
A21	Left Ocular 75° Temporal	46.0	X	
A22	Left Ocular 90° Temporal	45.4	X	
A23	Left Ocular 90° Temporal +10 mm	45.7	X	
A24	Left Ocular 90°Temporal –10 mm	45.7	X	

9.3.1.3 Penetration Test (Plastic Windows Only)

Sample ID	Location	Pass	Fail
A23	Right Ocular	X	

9.4.2 Prismatic Power & Imbalance

Sample ID	Measured Value	Specification	Pass	Fail
A25	0.12 Δ	Prismatic Power- ≤ 0.37Δ	X	
	0.00 Δ	Vertical Imbalance- ≤ 0.37Δ	X	
	0.17 Δ Base out	Horizontal Imbalance- ≤ 0.75Δ Base Out ≤ 0.125Δ Base In	X	

9.4.3 Definition

Sample ID	Location	Measured Value	Specification	Pass	Fail
A25	Right Ocular	> Pattern 20	> Pattern 20	X	
	Left Ocular	> Pattern 20		X	

9.4.4 Haze (Clear Windows Only)

Sample ID	Location	Measured Value	Specification	Pass	Fail
A22	Right Ocular	3 %	≤ 3%	X	

9.4.5 Transmittance (Luminous)

Sample ID	Location	%T(L)	Specification	Pass	Fail
A25	Right Ocular	91	Clear: 100% ≥ T(L) ≥ 85%	X	
	Left Ocular	90		X	
	L/R Ratio	0.99	Clear up to shade 4: 1.10 ≥ L/R ≥ 0.90	X	

9.6 Flammability

Sample ID	Component	Calculated Rate of Burn	Specification	Pass	Fail
A22	Lens	0 mm/min	≤ 76mm/min.	X	
	Frame	30 mm/min		X	
	Frame strap	30 mm/min		X	
	Sweat band	0 mm/min		X	

9.8 Cleanability; Result: Pass

The function and markings are not impaired by the cleaning procedure.

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Sample Photographs:

Picture A1

Picture A2

Picture A3