Comparison of ISO/DIS 19712 to ANSI Solid Surface Standards

By

Klaus Fromme

Bradley Corporation

ISO/DIS 19712

The proposed ISO standard is a first in the industry for solid surface products other than sheets. ANSI/ICPA SS-1-2001 standard is only for sheets

The proposed ISO standard has a more specific rating system than the ANSI standard. Results of the tests are listed rather than pass / fail.

ISO/DIS 19712

Plastics - Decorative Solid Surface Material

ISO/DIS 19712-1 Classification and specifications

ISO/FDIS 19712-2 Sheet goods - Determination of properties

ISO/FDIS 19712-3 Solid Surface Shapes - Determination of properties

Solid Surface Definition

ISO/DIS 19712:

Solid Surfacing Material (SSM) shall be composed of polymeric materials with suitable pigments and fillers. These materials shall be of the same composition throughout the thickness of the product. They shall be repairable and renewable to the original finish.

ANSI/ICPA SS-1-2001

Solid surface materials are manufactured from polymeric materials. They are of the same composition throughout the thickness of the solid surface product. They are capable of being fabricated into continuous surfaces with inconspicuous seams.

ISO CD 19712-1.2 Property Requirements

Table 2 — Property requirements

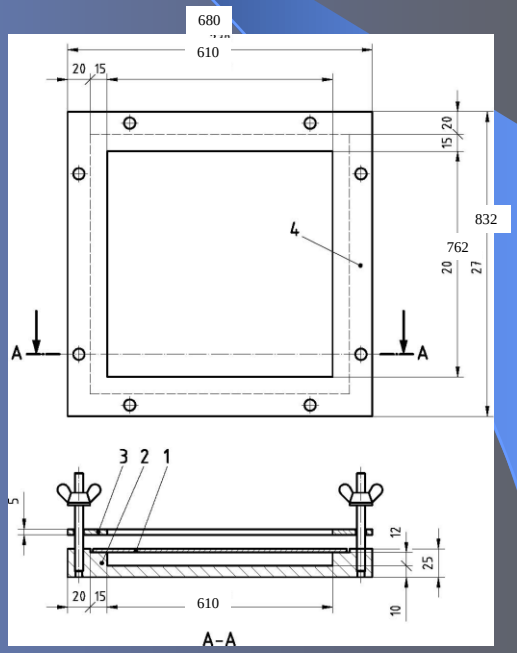
Property	Test method		Property or attribute	Unit (max. or min.)	Material type		
	ISO 19712-2, Clause No.	ISO 19712-3, Clause No.			Sheet	Shaped Products	
						Kitchen sinks	Others
Resistance to dry heat	12 Method A 12 Method B	10 Method A 10 Method B	Appearance	Rating (not worse than)	3	3	3
	12 Method C	10 Method C		Surface defect	No failure	No failure	No failure
Resistance to wet heat	14 Method A 14 Method B	11 Method A 11 Method B	Appearance	Rating (not worse than)	3	3	3
Resistance to impact by large-diameter ball	8		Drop height [a)]	mm (min)	$6 \leq d < 9$: 700 $9 \leq d < 12$: 1 000 $12 \leq d$: 1 300 (where d = nominal thickness)	610	610
		6	Appearance	Surface defect		No failure	No failure
Resistance to staining / chemicals	10 Method A	8 Method A	Appearance Groups 1 and 2 Groups 3 and 4	Rating (not worse than)	 3 3	 3 3	 3 3
	10 Method B	8 Method B	Appearance Staining agents 1 to 10 Staining agents 11 to 15	Rating (not worse than)	 3 3	 3 3	 3 3
			Cleanability Index	Sum of ratings (max.)	16	16	16
Lightfastness	9 Method A	7 Method A	Contrast	Grey scale rating	4 to 5	4 to 5	4 to 5
	9 Method B	7 Method B	Appearance	Rating (not worse than)	4	4	4
	9 Method C	7 Method C	Contrast	Blue wool standard	5	5	5
Resistance to cigarette burns	11 Method A	9 Method A	Appearance	Rating (not worse than)	3	3	3
	11 Method B	9 Method B	Time to failure	S (min.)	110	110	100
Thermal-cycle water resistance test	13		Duration	Cycles	250		
			Temperature range	° C	20 / 90		
			Appearance	Surface defect	No failure		
		12 Method A	Duration	Cycles		1 000	
			Temperature range	° C		15 / 90	
			Appearance	Surface defect		No failure	
		12 Method B	Duration	Cycles			500
			Temperature range	°C			10/ 65
			Appearance	Surface defect			No failure
Load test	7	--	Deflection under load [b)]	mm (max)	< 0,25	--	--
			Appearance	Surface defect	No failure		

Load Test

ISO/FDIS 19712 -1 Same as ANSI

For sheet stock only

- Panel Size: 640mm x 792mm (26” x 32”)
- Clamped in fixture
- Load = 1334N or 300lb



Impact Tests

A. Ball Drop - Sheet Stock

ISO/FDIS 19712-2: Varies by Material Thickness

- Panel Size: 230mm x 230mm - 9” x 9”
  - Clamped in fixture
- Ball Size: 324g (0.71lb) - 42.8mm (1.68”)
- Drop Height: 6mm thick = 700mm
  9mm thick = 1000mm
  12mm thick = 1300mm

ANSI/ICPA SS-1-2001

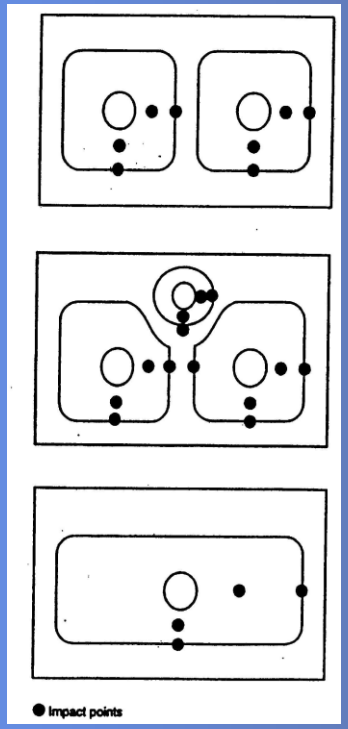
- Panel Size: 26” x 32” x 1/2”
  - Clamped at four corners w/ 24” x 30” unsupported area.
- Ball Size: 0.5lb - 1.50”
- Drop Height: 24”

Impact Tests

A. Ball Drop - Sinks

ISO/FDIS 19712-3: Same as ANSI Z124.6 - 4.2.1

A 38,1 mm diameter, 0,225 kg steel ball shall be dropped from a height of 610 mm to impact once on each of four different areas in each sink compartment.



Impact Tests

B. Knife Drop

ISO/DIS 19712: No test requirement

ANSI/ICPA SS-1-2001: See ANSI Z124.6 - 4.2.2

B. Skillet Drop

ISO/DIS 19712: No test requirement

ANSI/ICPA SS-1-2001: See ANSI Z124.6 - 4.2.3

Colorfastness

ISO/DIS 19712:

- Three alternative methods listed
  - The method used must be identified on the test report.
  - Method B is similar to ANSI/ICPA SS-1 2001
- Temperature = 70C (158F)
- Duration = 72 hours

ANSI/ICPA SS-1-2001

- Xenon Arc test per ANSI/ASTM D2565
- Temperature = 63C (145F)
- Duration = 200 hours

Stain / Chemical Resistance Test

ISO/DIS 19712:

- Two alternative methods listed because some chemicals are not available throughout the world.
  - **Method A**: 4 groups of staining agents & chemicals
    - Similar to a combined ANSI Z124.6 / 5.2 & 5.5
    - Test report to list the rating of each staining agent.
      - Rating must be not worse than 3 - moderate change
  - **Method B**: 2 groups of staining agents
    - Similar to ANSI Z124.6 / 5.5
    - Cleanability index - sum of the ratings (max 16)
    - Test report to include Cleanability rating plus note any staining agents that produced a moderate or severe effect.

Resistance to Cigarette Burns

ISO/DIS 19712:

- Two alternative methods listed:
  - **Method A**: Uses a burning cigarette placed on the surface.
    - Similar to a ANSI Z124.6 / 5.4
    - Three tests with three different well-known brands
    - Test report to list the average rating (1 - 5).
      - Rating must be not worse than 3 - moderate change
  - **Method B**: Uses an electric heater
    - Three tests at 285C
    - Test report to list average time to failure (blistering, charring, permanent discoloration, or crazing)

Resistance to Dry Heat

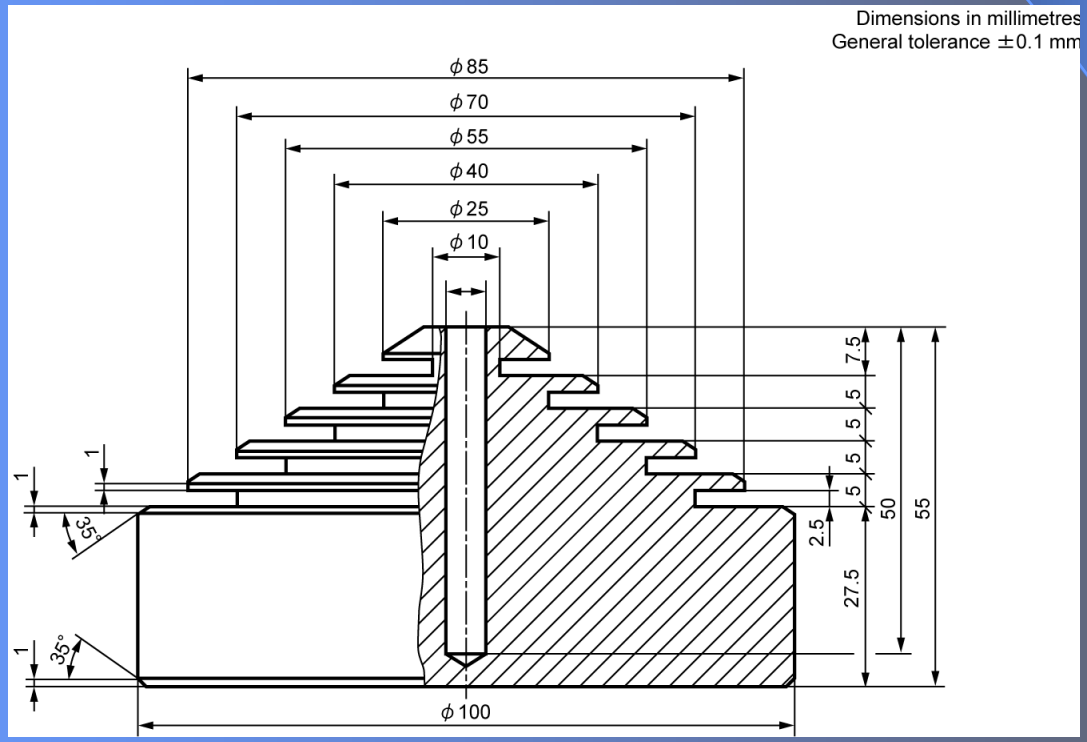
ISO/DIS 19712:

- Three alternative methods listed:
  - **Method A**: Uses an aluminum vessel filled with glycerol tristearate at **180C**.and placed on the surface for **20** minutes.
    - Test report to list the rating (1 - 5).
      - Rating must be not worse than 3 - moderate change
  - **Method B**: Uses an aluminum alloy block heated to **180C** and placed on the surface for **20** minutes.
    - Similar to a ANSI Z124.6 / 5.6
    - Test report to list the rating (1 - 5).
      - Rating must be not worse than 3 - moderate change

Resistance to Dry Heat

ISO/DIS 19712:

- **Method C**: Uses special machined aluminum disk heated to **185C** and placed on the surface for **10** minutes.
  - There shall be no cracking, crazing, or blistering.



Resistance to Wet Heat

ISO/DIS 19712:

- Two alternative methods listed: Replaces Hot Wax Test ANSI Z124.6 / 5.7
  - **Method A**: Uses a vessel filled with boiling water placed in a pool of boiling water which was poured onto the surface.for **20** minutes.
    - Test report to list the rating (1 - 5).
      - Rating must be not worse than 3 - moderate change
  - **Method B**: Uses the same special machined aluminum disk from Method C Dry Heat test heated to **100C** and placed on a damp cloth in contact with the surface for **20** minutes.
    - Test report to list the rating (1 - 5).
      - Rating must be not worse than 3 - moderate change

Thermal-Cycle Water Resistance

ISO/DIS 19712: No cracking crazing,, blistering, pealing or delamination when exposed to:

- Sheet: 20C (68F) to 90C (194F) for 250 cycles
- Lavs: 10C (50F) to 65C (150F) for 500 cycles w/ 30s pause
- Kitchen sinks: 15C (60F) to 90C (194F) for 1000 cycles with 30s pause between hot & cold.

ANSI: No cracking crazing,, blistering, pealing or delamination when exposed to:

- Sheet: 70F to 190F for 250 cycles (ANSI/ICPA SS-1-2001)
- Lavs: 50F to 150F for 500 cycles with 30s pause (ANSI Z124.3 / 6.1)
- Kitchen sinks: 70F to 190F for 250 cycles without pause (ANSI Z124.6 / 6.1.1)