



PERFORMANCE AND PROPERTIES | Chemical and physical properties

| PROPERTIES | TYPICAL RESULTS | TEST PROCEDURE |
|----------------------------------|---------------------------------|--------------------------|
| Tensile strength | 6,000 psi | ASTM D 638 |
| Tensile modulus | 600,000 psi | ASTM D 638 |
| Flexural strength | 10,000 psi | ASTM D 790 |
| Flexural modulus | 1,000,000 psi | ASTM D 790 |
| Elongation | 0.5% | ASTM D 638 |
| Hardness | 92 Rockwell "M" Scale | ASTM D 785 |
| | 65 Barcol Impressor | ASTM D 2583 |
| Thermal expansion | 2.0×10^{-5} in/in F° | ASTM D 696 |
| Gloss (60 Gardner) | Between 5 - 20 | NEMA LD-3 |
| Color stability | No change-200hrs | NEMA LD-3 |
| Stain resistance | Pass | |
| | Rating 41 | ANSI Z 124 |
| Abrasion resistance | Pass | ANSI Z 124 |
| Boiling water surface resistance | No effect | NEMA LD-3 |
| High temperature resistance | No effect | NEMA LD-3 |
| IZOD Impact resistance (notched) | 0.28 ft.lbf/in | ASTM D 256 |
| Ball drop | | |
| 12.3 mm sheet | 144" w/ 1/2 lb ball, No failure | NEMA LD-3 |
| Fungi and Bacterial resistance | No growth | ASTM G 21, G22 |
| Specific gravity | | |
| Solid colors | 1.72 | |
| Patterened colors | 1.69 | ASTM D 792 |
| Water absorption | 0.04%, (1/2", 24hrs) | |
| | 0.11%, (1/8", 24hrs) | ASTM D 570 |
| Flammability | Class A / Class 1 | UBC 8-1 |
| Flame spread | 10 | ASTM E 84 |
| Smoke density | 10 | ASTM E 84 |
| Radiant heat resistance | No visual effect | NEMA LD-3 |
| Toxicity | 84.4g (Solid Color) | Pittsburgh Test Protocol |
| | 81.8g (Patterned Color) | (LC50 Test) |



PERFORMANCE AND PROPERTIES | Fungal resistance

1. Test method

ASTM G 21

(Determining Resistance of Synthetic Polymeric Materials of Fungi)

STRAINS:

Aspergillus Niger (ATCC 9642)
Penicillium Pinophilum (ATCC 11797)
Chaetomium Globosum (ATCC 6205)
Gliocladium Virens (ATCC 9645)
Aureobasidium Pullulans (ATCC 15233)

CULTURAL CONDITION:

84.2 +/- 1.8°F(29 +/- 1°C), 90%RH, 21 days

LIMITATION

| OBSERVED GROWTH ON SPECIMEN | RATING | RATING |
|--------------------------------------|--------|--------|
| None | 0 | 0 |
| Trace of growth (Less than 10%) | 1 | 1 |
| Light Growth (10%-30%) | 2 | 2 |
| Medium Growth (30%-60%) | 3 | 3 |
| Heavy Growth (60%-Complete coverage) | 4 | 4 |

2. Test result

Zero traces of growth

| Culture Time | 0 WEEK | 1 WEEK | 2 WEEKS | 3 WEEKS |
|--------------|--------|--------|---------|---------|
| Result | 0 | 0 | 0 | 0 |



PERFORMANCE AND PROPERTIES | Bacterial resistance

1. Test method

*ASTM G 22

(Determining Resistance of Plastics to Bacteria)

*STRAINS:

Pseudomonas Aeruginosa (ATCC 13388)

*CULTURAL CONDITION:

96.8 +/- 1.8°F(36 +/- 1°C), 90%RH, 21 days

*LIMITATION

| OBSERVED GROWTH ON SPECIMEN | RATING |
|--------------------------------------|--------|
| None | 0 |
| Trace of growth (Less than 10%) | 1 |
| Light Growth (10%-30%) | 2 |
| Medium Growth (30%-60%) | 3 |
| Heavy Growth (60%-Complete coverage) | 4 |

2. Test result

*Zero traces of growth

| Culture Time | 0 WEEK | 1 WEEK | 2 WEEKS | 3 WEEKS |
|--------------|--------|--------|---------|---------|
| Result | 0 | 0 | 0 | 0 |



PERFORMANCE AND PROPERTIES | Toxicity

1. Test method

THE UNIVERSITY OF PITTSBURGH TEST PROTOCOL (UPitt)

- For Measurement of Acute Lethality of Thermal Decomposition Products of Specimens
- The major function of the UPitt laboratory test method is to provide a means of evaluating the lethal toxic potency of thermal decomposition products of test materials.

TEST PROCEDURE

- The test protocol calls for samples to be subjected to continuously changing temperature conditions starting
- The test system generates decomposition products that continuously change in chemical composition as the temperature increase.
- Animals are exposed to the decomposition products starting when the test sample loses one percent of its initial weight and continues for 30 min.
- The UPitt protocol utilizes rodent (mouse) lethality as the primary source in evaluating the toxicity of combustion atmosphere produced by a material.
- Groups of four animals at a time are exposed to the combustion gases generated from different initial quantities of the test material.
- This establishes a concentration-response relationship.
- From this relationship, the concentration estimated to produce lethality in 50 percent of the animals within the specified time is obtained by interpolation.
- This concentration, commonly termed the LC50, is a measure of the toxic potency of combustion atmosphere.

*EVALUATION

- The Building Code of the City of New York requires the materials to be “not more toxic than wood,” which requires a passing LC50 value of greater than or equal to 19.7g.

2. Test result

Zero traces of growth

| TEST SAMPLE | LC50 value |
|-----------------|------------|
| Solid Color | 84.4g |
| Patterned Color | 81.8g |

Thermal decomposition of Staron® Solid Surfaces were measured at a temperature greater than 300°C (572°F), which is most likely in case of fire. Staron® Solid Surfaces meet the requirements for interior finish material as defined by Title 27, Chapter 1, Subchapter 5, Article 5, of the Building Code of the City of New York.



PERFORMANCE AND PROPERTIES | Chemical resistance

1. Test method

Apply 3 drops of each chemical reagent on the surfaces of Staron® Solid Surfaces

Expose the sample for 16 hours; covered with glass plate and uncovered

Check the surface and scrub the surface with a wet Scotch-Brite® Pad and bleaching cleanser such as Ajax®

2. Test Result

THE RESIDUE FROM THE FOLLOWING CHEMICAL REAGENTS CAN BE REMOVED WITH A WET SCOTCH-BRITE PAD AND BLEACHING CLEANSER.

| | |
|---|-------------------------------|
| Acetic acid (10%) | Acetone |
| Ammonia | Ammonium hydroxide (5,28%) |
| Amyl acetate | Amyl alcohol |
| Ball point pen | Benzene |
| Bleach (household type) | Blood |
| B-4 body conditioner | Butyl alcohol |
| Carbon disulfide | Carbon tetrachloride |
| Citric acid (10%) | Calcium thiocyanate (78%) |
| Cigarette (nicotine and tar) | Coffee |
| Cooking oils | Cottonseed oil |
| Cupra ammonia | Dishwashing liquid/powders |
| Ethanol | Ethyl acetate |
| Ethyl ether | Formaldehyde |
| Gasoline | Gentian violet |
| Grape juice | Hair dyes |
| Household soaps | Hydrochloric acid (20,30,37%) |
| Hydrogen peroxide | Iodine (1%) |
| Ketchup | Lemon juice |
| Lipstick | Mercurochrome (2%) |
| Methanol | Methyl ethyl ketone |
| Methyl orange (1%) | Methyl red (1%) |
| Mineral oil | Mustard |
| Nail polish | Naphthalene |
| N-hexane | Olive oil |
| Pencil lead | Perchloric acid |
| Permanent marker pen | Shoe polish |
| Soapless detergents | Sodium bisulfate |
| Sodium hydroxide solution (5,10,25,40%) | Soy sauce |
| Sodium sulfate | Sulfuric acid (25,33,60%) |
| Sugar (sucrose) | Tea |
| Sulfuric acid (25,33,60%) | Toluene |
| Tetrahydrofuran | Urea (6%) |
| Tomato juice | Vinegar |
| Uric acid | Wine |
| Washable inks | Zinc Chloride |
| Xylene | |

THE FOLLOWING CHEMICAL REAGENTS MAY AFFECT THE SURFACE WITH MORE SERIOUS DAMAGE, REQUIRING SANDING FOR COMPLETE REMOVAL. FREQUENT AND/OR PROLONGED EXPOSURE TO THESE REAGENTS SHOULD BE AVOIDED.

Acetic acid (90,98%)

Acid drain cleansers

Chlorobenzene

Chloroform (100%)

Chromic trioxide acid

Cresol

Dioxane

Ethyl acetate

Equalizing mix (50/50)

Film developer

Formic acid (50,90%)

Furfural

Glacial acetic acid

Hydrofluoric acid (48%)

Luralite mix (50/50)

Methylene chloride based products such as paint removers, brush cleansers and some metal cleansers

Nitric acid (25,30,70%)

Phenol (40,85%)

Phosphoric acid (75,90%)

Sulfuric acid (77,96%)

Trichloroacetic acid (10,50%)

3M Avagard™ D



PERFORMANCE AND PROPERTIES | Flammability

1. Test method

*ASTM E 84

(Surface Burning Characteristics of Building Materials)

*SAMPLE PREPARATION AND CONDITIONING:

Three(3) panels (1/2" thick measuring 2' x 8') were fitted end-to-end to form a 24" x 24'0" sample. Because the sample was self-supporting, no further preparation was necessary.

*TEST PROCEDURE:

The tunnel was thoroughly pre-heated, using natural gas. When the brick temperature, sensed by a floor thermocouple, had reached the prescribed 105 +/- 5°F level, the sample was inserted into the tunnel and the test

The operation of the tunnel was checked by performing 10 minute test with inorganic board on the day of the test.

*Rating

The National Fire Protection Association Life Safety Code 101, Section 6-5.3, "Interior Wall and Ceiling Finish Classification," has means of classifying materials with respect to Flame Spread and Smoke Developed when

| FLAME SPERAD | SMOKE DEVELOPED | RATING |
|--------------|-----------------|---------|
| 0 - 25 | 0 - 450 | Class A |
| 26 - 75 | 0 - 450 | Class B |
| 76 - 225 | 0 - 450 | Class C |

2. Test result

*Flame spread:10

*Smoke developed:10

*Rating: Class A / Class 1

*Reference

| ITEM | FLAME SPREAD | SMOKE DEVELOPED |
|------------------------------|--------------|-----------------|
| Wallboard, Gypsum | 15 | 0 |
| Wood particle board | 155 | 200 |
| Fiberglass reinforced panels | 70 | 500+ |
| Laminates, Plastic | 70 | 35 |
| Wall covering, Interior | 25 | 15 |
| Hardboard | 150 | 400 |