



TECHNICAL BULLETIN 6

## Chemical and Stain Resistance of Aristech Surfaces Acrylic Sheet

The following tables provide stain and chemical resistance ratings for Aristech Surfaces Acrylic Sheet, Grades Altair® I-300 and GPA.

**Table 1**

### 1. 5.2 Stain Resistance per ANSI Z124.1—1995

|    |                 | ALTAIR® I-300   |           |
|----|-----------------|-----------------|-----------|
|    |                 | Covered         | Uncovered |
| 1. | Black crayon    | 2               | 2         |
| 2. | Shoe polish     | 2               | 2         |
| 3. | Washable ink    | 1               | 1         |
| 4. | Gentian violet  | 1               | 1         |
| 5. | Lipstick        | 2               | 2         |
| 6. | Hair dye        | 2               | 2         |
| 7. | Iodine solution | 1               | 1         |
|    |                 | <u>11</u>       | <u>11</u> |
|    |                 | <b>TOTAL 22</b> |           |

### 2. 5.5 Chemical Resistance per ANSI Z124.1—1995

|     |                                       | ALTAIR® I-300 |            |
|-----|---------------------------------------|---------------|------------|
|     |                                       | Covered       | Uncovered  |
| 1.  | Petroleum naphtha                     | Unaffected    | Unaffected |
| 2.  | Ethyl Alcohol                         | Unaffected    | Unaffected |
| 3.  | Amyl acetate                          | Unaffected    | Unaffected |
| 4.  | Household Ammonia, 10% Water Solution | Unaffected    | Unaffected |
| 5.  | 10% citric acid                       | Unaffected    | Unaffected |
| 6.  | 6% urea                               | Unaffected    | Unaffected |
| 7.  | 3% Hydrogen Peroxide                  | Unaffected    | Unaffected |
| 8.  | Sodium hypochloride (Chlorox)         | Unaffected    | Unaffected |
| 9.  | 5% phenol solution (Lysol)            | Unaffected    | Unaffected |
| 10. | Toluene                               | Unaffected    | Unaffected |
| 11. | Ethyl acetate                         | Unaffected    | Unaffected |
| 12. | 1% lye solution (Drano)               | Unaffected    | Unaffected |
| 13. | Acetone                               | Unaffected    | Unaffected |

The testing was performed by an independent laboratory.

**Stain resistance:**

1= non staining

2= removable by alcohol or naphtha

**Table 2**

### Chemical Resistance of Aristech Surfaces Acrylic Altair® I-300 with other substances.

| Reagent                                | Result     |
|--|------------|
| 1. Gasoline                            | Unaffected |
| 2. Alcohol, (Ethyl, Methyl, Isopropyl) | Unaffected |
| 3. Amyl Acetate                        | Unaffected |
| 4. Carbon Tetrachloride                | Unaffected |
| 5. Moth Spray                          | Unaffected |
| 6. Fly Spray                           | Unaffected |
| 7. Household Soap                      | Unaffected |
| 8. Soapless Detergents                 | Unaffected |
| 9. Trisodium Phosphate                 | Unaffected |
| 10. Olive Oil                          | Unaffected |
| 11. Household Ammonia 10%              | Unaffected |

**Table 2****Chemical Resistance of Aristech Surfaces Acrylic Altair® I-300 with other substances**

| Reagent                 | Result           |
|-------------------------|------------------|
| 12. Citric Acid 19%     | Unaffected       |
| 13. Coffee              | Unaffected       |
| 14. Sodium Bisulphate   | Unaffected       |
| 15. Lipstick            | Unaffected       |
| 16. Urea 6.6%           | Unaffected       |
| 17. Shoe Polish         | Unaffected       |
| 18. Tea                 | Unaffected       |
| 19. Beet Juice          | Unaffected       |
| 20. Vinegar             | Unaffected       |
| 21. Ink Washable        | Unaffected       |
| 22. Mild Silver Protein | Unaffected       |
| 23. Bluing              | Superficial Only |
| 24. Dye                 | Superficial Only |
| 25. Iodine Solution     | Superficial Only |
| 26. Mercurochrome       | Superficial Only |
| 27. Phenol 3%           | Superficial Only |
| 28. Hydrogen Peroxide   | Superficial Only |
| 29. Hypochlorite Bleach | Superficial Only |
| 30. Toluene             | Superficial Only |
| 31. Benzene             | Superficial Only |
| 32. Lacquer Thinner     | Superficial Only |
| 33. Ethyl Acetate       | Superficial Only |
| 34. Gentian Violet 2%   | Superficial Only |
| 35. Lye 1%              | Superficial Only |
| 36. Acetone             | Superficial Only |

**Table 3****Chemical Resistance Aristech Surfaces Acrylic**

| Property   | ASTM D-543-78 Method (2) | Units | GPA  | Altair® I-300 |
|--|--------------------------|-------|------|---------------|
| <b>Chemical Resistance</b>   |                          |       |      |               |
| Weight Gain After 7 Days Immersion at 77°F.<br>(1% or less is considered negligible) |                          | %     |      |               |
| 30% Sulfuric Acid  |                          |       | 0.2  | 0.3           |
| 3% Sulfuric Acid   |                          |       | 0.4  | 0.5           |
| 10% Nitric Acid  |                          |       | 0.3  | 0.4           |
| 5% Acetic Acid   |                          |       | 0.4  | 0.5           |
| 10% Hydrochloric Acid  |                          |       | 0.3  | 0.4           |
| Oleic Acid   |                          |       | 0.0  | 0.0           |
| 10% Sodium Hydroxide   |                          |       | 0.3  | 0.4           |
| 1% Sodium Hydroxide  |                          |       | 0.4  | 0.5           |
| 10% Ammonium Hydroxide   |                          |       | 0.4  | 0.5           |
| 2% Sodium Carbonate  |                          |       | 0.4  | 0.5           |
| 10% Sodium Chloride  |                          |       | 0.3  | 0.4           |
| 3% Hydrogen Peroxide   |                          |       | 0.4  | 0.6           |
| Distilled Water  |                          |       | 0.4  | 0.5           |
| 50% Ethyl Alcohol  |                          |       | 0.8  | 1.7           |
| 95% Ethyl Alcohol  |                          |       | 1.4  | 1.1           |
| Acetone  |                          |       | D    | R-S           |
| Ethyl Acetate  |                          |       | D    | R-S           |
| Ethylene Dichloride  |                          |       | D    | R-S           |
| Carbon Tetrachloride   |                          |       | 0.03 | 0.0           |
| Toluene  |                          |       | D    | 0.0           |
| Gasoline (Heptane)   |                          |       | 0.0  | 0.0           |
| 99% Isopropyl Alcohol  |                          |       | 0.1  | -0.2          |
| 99% Methyl Alcohol   |                          |       | 8.1  | 17.6          |
| Lacquer Thinner  |                          |       | D    | 0.3           |
| Dibutyl Sebacate   |                          |       | -0.1 | 0.0           |
| 10% Citric Acid  |                          |       | 0.3  | 0.4           |
| 5% Phenol Solution   |                          |       | A-C  | A-C           |

Chemical Resistance Code: A — Attacked, C — Colored, D — Dissolved, R — Rubbery, S — Swollen, T — Turbid

(1) Data given are average values and should not be used for specification purposes.

(2) Samples conditioned per ASTM D-618-61, Procedure B, except where noted.

Table 4

| Solvent Resistance per ASTM D-1300*<br>Chemical | Altair®<br>I-300 | Solvent Resistance per ASTM D-1300*<br>Chemical | Altair®<br>I-300 |
|---|------------------|---|------------------|
| <b>Esters:</b>                                  |                  | <b>Acids:</b>                                   |                  |
| Amyl Acetate                                    | A                | Citric Acid                                     | A                |
| Ethyl Acetate                                   | B                | Hydrogen Peroxide, 3%                           | B                |
| <b>Petroleum Distillates:</b>                   |                  | <b>Bases:</b>                                   |                  |
| Gasoline or Naphtha                             | A                | Hypochlorite Bleach 1                           | B                |
| <b>Alcohols:</b>                                |                  | Trisodium Phosphate                             | A                |
| Methyl Alcohol                                  | A                | <b>Organic Solvents:</b>                        |                  |
| <b>Household Compounds:</b>                     |                  | <b>Halogen Bearing Chains:</b>                  |                  |
| Moth Spray 3                                    | A                | Ethylene Dichloride                             | C                |
| Mild Silver Protein<br>(such as 20% argyrol)    | A                | <b>Unsaturated Rings:</b>                       |                  |
| Ink, washable                                   | A                | Phenol Solution, 3% 2                           | B                |
| Household Soaps and<br>Washing Powders          | A                | Toluene   | B                |
| Mercurochrome Solution                          | B                | <b>Ketones:</b>                                 |                  |
| Bluing  | B                | Acetone   | B                |
| Dye   | B                | Methyl Ethyl Ketone                             | B                |
| Iodine Solution, 1% in Alcohol                  | B                | Lacquer Thinner                                 | B                |
| Disinfectants<br>(such as 3% Phenol Solution)   | B                |   |                  |

\* ASTM D-1300 Test requires that 2-3 drops of a specified chemical be applied to the surface of the acrylic and covered with a watch glass (to prevent the chemical from evaporating). The chemical is allowed to contact the acrylic surface for 14 hours. After that time, the surface is examined and given one of the ratings listed above.

A—Unaffected

B—Cleaned by application of a mild abrasive.

C—Surface attacked.

1 Representative products would be Clorox, Drano, and Sani-Flush.

2 Representative products would be Tintex, Rit and Lysol.

3 Representative products would be Larvex, Flit, or Dreft.

Table 5

## Chemicals in Common Household Compounds

| Chemical                       | Example of<br>Household Compound | Concentration<br>(%) |
|--------------------------------|----------------------------------|----------------------|
| <b>Acids:</b>                  |                                  |                      |
| Acetic Acid                    | Vinegar                          | 5.0                  |
| Boric Acid                     | Listerine                        | Unspecified          |
| Hydrochloric Acid              | Lysol                            | 0.5                  |
| Hydrogen Peroxide              | Hydrogen Peroxide Solution       | 3.0                  |
| Peroxy Sulfate                 | Vanish                           | 0.04                 |
| Sodium Acid Sulfate            | Vanish                           | 75.0                 |
| <b>Bases:</b>                  |                                  |                      |
| Sodium Hypochlorite            | Clorox                           | 5.3                  |
| Ammonia Derivatives            | Bobricks Ammonia Cleaner         | Unspecified          |
|                                | Windex                           | Unspecified          |
|                                | Lysol Bathroom Cleaner           | Unspecified          |
| Sodium Hydroxide               | Dow Oven Cleaner                 | Unspecified          |
|                                | Liquid Plumr                     | Unspecified          |
|                                | Drano                            | Unspecified          |
| <b>Organic Solvents:</b>       |                                  |                      |
| <b>Halogen Bearing Chains:</b> |                                  |                      |
| Trichloroethylene              | Aero Spot Remover                | Unspecified          |
| 1, 1, 1, — Trichloroethane     | Aero Spot Remover                | Unspecified          |
| <b>Unsaturated Rings:</b>      |                                  |                      |
| Phenol Derivatives             | 409 Bathroom Cleaner             | 0.10                 |
| Chlorinated Phenol Derivatives | 409 Bathroom Cleaner             | 0.08                 |
|                                | Pinesol                          | 0.1                  |
|                                | Enden                            | Unspecified          |
|                                | Ban                              | Unspecified          |

**Table 5 (continued)****Chemicals in Common Household Compounds**

| <b>Chemical</b>  | <b>Example of Household Compound</b> | <b>Concentration (%)</b> |
|--|--------------------------------------|--------------------------|
| <b>Organic Solvents:</b>   |                                      |                          |
| <b>Ethers:</b>   |                                      |                          |
| Unspecified  | Black Flag                           | 0.2                      |
| Oxalic Acid (straight chain)   | Delete                               | Unspecified              |
| Benzoic acid (ring structure)  | Listerine                            | Unspecified              |
| <b>Esters:</b>   |                                      |                          |
| Acetate Derivatives  | Lysol Bathroom Cleaner               | 1.5                      |
| <b>Alcohols:</b>   |                                      |                          |
| Isopropyl Alcohol  | Pinesol                              | 10.9                     |
| Unspecified  | Ban                                  | Unspecified              |
| Unspecified  | Listerine                            | 25.0                     |
| Unspecified  | Tincture Merthiolate                 | 50.0                     |
| Menthol Derivative (ring structure)  | Listerine                            | Unspecified              |
| Menthol Derivative (ring structure)  | Ben Gay                              | Unspecified              |
| <b>Saturated Straight Chains:</b>  |                                      |                          |
| Unspecified  | Lysol                                | Unspecified              |
| Unspecified  | Lysol Bathroom Cleaner               | Unspecified              |
| <b>Petroleum Distillates:</b> Includes both saturated and unsaturated straight chains and saturated ring structures. |                                      |                          |
| Petroleum Distillates  | Black Flag                           | Unspecified              |
|  | Favor                                | Unspecified              |
|  | Lighter Fluid                        | Unspecified              |

*For cautions and other information relating to handling of an exposure to this product, please see the applicable material safety data sheet published by Aristech Surfaces*

These instructions are based upon experience with Aristech Surfaces products only. Experience with products of other manufacturers is specifically disclaimed. For most uses, check for local code approval and test for application suitability. These procedures, techniques and suggested materials should only be used by personnel who are properly trained in the safe handling of the chemicals and the equipment with which they are working. Avoid aromatic solvents, clean with mild soap and water, avoid abrasives. These suggestions are based on information believed to be reliable, however, Aristech Surfaces makes no warranty, guarantee, or representation and assumes no obligations or liability as to the absolute correctness or sufficiency of any of the foregoing, or that additional or other measures may not be required under particular conditions or circumstances.

