

Wilsonart® Chemsurf® Chemical-Resistant Laminate

Technical Data

1. Manufacturer

Wilsonart International
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2. Product Description

Recommended Uses: Wilsonart® Chemsurf® Chemical-Resistant Laminate is produced for work tops and cabinet surfacing in intermediate-type laboratories where weight or cost constraints rule out slate, epoxy or stainless steel; the possibility of chemical spills rules out conventional high-pressure decorative laminate; or where a trend-aware colored or patterned surface is desired. Chemsurf is also recommended in areas where indiscriminate use of a variety of cleaning agents may be used.

Specific applications include laboratory cabinets, casework, counters and tabletops in hospitals, photographers' darkrooms, beauty salons and product testing facilities. Chemsurf is ideal for nurses' stations, physicians' and dentists' examining and treatment rooms and pathologists' work rooms. It is also practical and attractive surfacing for wainscoting in any of these areas.

- Type 390 is intended for horizontal, vertical and postforming surfaces and applications, including those where it is necessary or desirable to roll the laminate on a simple radius over the edge of a substrate. This eliminates seams, which are otherwise vulnerable to chemical attack. This type also may be applied to horizontal and vertical surfaces where a functional, durable, decorative material should also be chemical-resistant.

Note: If a high-wear surface is needed, Wilsonart® High Wear Laminate is recommended.

Product Composition: A special resin formulation is applied over the decorative surface paper to achieve chemical resistance. The decorative paper is treated with melamine resin; and the core is composed of kraft papers impregnated with phenolic resin. These sheets are then bonded at pressures greater than 1000 pounds per square inch at temperatures approaching 300°F (149°C). Finished sheets are trimmed and the backs sanded to facilitate bonding.

Basic Limitations

Chemsurf Laminates are intended for interior surfacing only, and not as structural materials. They must be bonded to suitable substrates.

Do not subject these laminates to extremes in humidity or to temperatures over 275°F (135°C) for sustained periods of time.

You should not expose these laminates to flame, molten metal, metallic sparks or intense, direct sunlight. They should not be used as cutting surfaces.

Note: Chemsurf Laminate should be protected from damage caused by high heat, such as heat created by Bunsen burners. The burners should be placed on a trivet to protect the laminate surface.

Due to resin composition, a slight color-shift can occur in Chemsurf. Please request a 'lab' sample for color confirmation.

Pattern and Color Availability:

Chemical-Resistant Laminate is available in most **Standard Line (DG1)** patterns. Please note the patterns that are **not** available in Chemsurf:

Patterns **NOT** available in Chemsurf Type 390 are:

1793 Crystal Fusion	1827 Metallic Bronze	4574 Mesa Twilight
1794 Amber Fusion	1828 Metallic Steel	4576 Mesa Flint
1796 Bronzed Fusion	1829 Metallic Silver	4577 Mesa Ridge
1797 Jade Fusion	1830 Mystic Gemstone	4578 Mesa Blanca
1799 Ebony Fusion	1831 Raven Gemstone	4579 Mesa Sand
1811 Deepstar Flint	1832 River Gemstone	4580 Mesa Gold
1812 Deepstar Fossil	1834 Crystalline Shell	4581 Mesa Midnight
1813 Deepstar Glaze	1835 Crystalline Onyx	4584 Brazilian Topaz
1814 Deepstar Bronze	1836 Crystalline Ice	4588 Kalahari Topaz
1815 Deepstar Agate	1837 Crystalline Pearl	4589 Smoky Topaz
1816 Deepstar Jade	1838 Crystalline Dune	4591 Citrine Topaz
1817 Deepstar Mineral	1839 Crystalline Braun	4799 Galactic Black
1818 Deepstar Slate	1840 Crystalline Iris	4830 Satin Stainless
1819 Bella Venito	1841 Desert Passage	4862 Sandy Topaz
1820 Bella Noche	1842 Canyon Passage	4863 Antique Topaz
1821 Bella Reale	1843 Mountain Passage	4864 Jeweled Sapphire
1822 Bella Capri	1844 Alpine Passage	4865 Jeweled Opal
1823 Sedona Bluff	1845 Night Passage	4866 Jeweled Coral
1824 Sedona Spa	4571 Mesa Sunrise	4867 Jeweled Mica
1825 Sedona Spirit	4572 Mesa Desert	4868 Jeweled Ivory
1826 Sedona Trail	4573 Mesa Verte	7944 Madagascar
		7945 Xanadu
Custom Laminate: Silk Screen & Digital Image are NOT available		
Non-Standard Line (DG2) patterns are NOT available		

Please verify pattern, size and finish availability by checking the Laminate Pattern Availability Search @ www.wilsonart.com/design/patternavail

***Most Popular Chemsurf patterns available in Type 390 are:**

D91 Slate Grey	4657 Green Legacy	4791 Willowstone
D92 Dove Grey	4663 Tawny Legacy	4793 Windswept
D381 Fashion Grey	4667 Green Tigris	4810 Titanium EV
1531 Light Beige	4669 Natural Tigris	4811 Silicon EV
1573 Frosty White	4673 Saffron Tigris	4813 Nickel EV
1595 Black	4674 Evening Tigris	4820 Carbon EV
4622 Grey Nebula	4781 Sunstone	7054 Wild Cherry
4623 Graphite Nebula	4783 White Tigris	7061 Natural Pear
4651 Navy Legacy	4789 Limestone	7909 Fusion Maple
4655 Natural Legacy	4790 Greystone	7925 Monticello Maple

***Items on Chemsurf sample chain, SCO300.**

Finishes:

- #60 Matte

A fine matte texture with a slight sheen offers scratch-resistance properties of 2.0 or 2.5 Newtons (measure of force). Recommended for horizontal and vertical applications. *Glossometer reading: MD and CD 16 ± 2.*

NOTE: Glossometer readings are made at a 60° angle of incidence. MD refers to the machine direction of a laminate sheet, and CD refers to the cross direction.

Phenolic Core: Brown

Product Type Available:

Postforming Type	390-60
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Sheet Width	48" (1219mm)	60" (1524mm)
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Sheet Length	96" (2438mm)	120" 3048mm	144" (3658mm)
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Note: An 8 sheet minimum order applies to 4x10', 4x12', 5x8' & 5x10' sizes.

Sheet Thicknesses

Type	Typical Wilsonart Thickness	Weight per Square foot
Postforming Type 390 (HGP)	0.034" ± 0.005" (0.86mm ± 0.13mm)	0.257#

3. Technical Data

Physical Properties of Chemsurf Chemical-Resistant Laminate

NEMA Test	Type390-60	NEMA Standard (HGP Values)
Scratch Resistance (N*)	2.5	N/A
Wear Resistance (cycles #1573, Frosty White & 1595, Black ONLY All other Wilsonart colors)	≥1,500 ≥700	400 (min.)
Boiling Water Resistance	No effect	Slight effect
High Temperature Resistance	Slight effect	Slight effect
Radiant Heat Resistance (seconds)	200	100 (min.)
Stain Resistance† Reagents 1-10 11-15	No effect No effect	No effect Moderate effect
Dimensional Change Machine Direction Cross Direction	0.50% 0.80%	1.1% (max.) 1.4% (max.)
Ball Impact Resistance	60" (1524mm)	30" (508mm)
Cleanability (cycles)	10	20 (max.)
Blister Resistance (seconds)	70	55
Formability‡ (Type 390 only)	5/8" (15mm) face 3/16" (5mm) back	5/8" (16mm)
Appearance	No ABC defects	No ABC defects

*(N) Newtons - measure of force

†For a complete list of acids, bases, solvents, reagents, indicators and other lab materials safe for use on Chemsurf, please see pages 4 and 5.

‡ Radius listed for face is actually the radius of the form around which the plastic is postformed. The radius listed for back is actually the radius to which the decorative face is postformed.

Codes and Certifications:

Chemsurf conforms to typical standards of ANSI/NEMA LD3-2005 for HGP postforming laminate. At present, there is no general industry standard for a high-pressure, chemical-resistant laminate.

The GREENGUARD Environmental Institute™ has awarded its GREENGUARD® Indoor Air Quality Certification to Wilsonart Laminate. All Wilsonart Laminate product types were tested under the stringent GREENGUARD Standards for low-emitting products. All GREENGUARD Indoor Air Quality Certified products ensure minimal impact on the indoor environment. For a copy of the certificate, visit www.greenguard.org.

ASTM G-22 Compliance for Product 390 (60 Finish).

Bacterial Resistance Test - No bacterial growth

Bacterial Susceptibility Test - No contamination by bacteria growth of:

Staphylococcus aureus, Streptococci faecalis, Escherichia coli and Klebsiella pneumoniae.

Scientific Equipment & Furniture Association SEFA No. 8.1 approved.

New York City Material Equipment Acceptance (MEA) number for Wilsonart® Chemsurf® Chemical-Resistant Laminate, Product Type 390, is 262-95-M.

ISO 4586 Standards

Various grades of Wilsonart Basic Type Laminates meet or exceed the International Standards Organization Specifications as found in ISO 4586 titled, "High-Pressure Decorative Laminate (HPDL) - Sheets Based on Thermosetting Resins - Part I: Specifications."

Chemical and Stain Resistance for Wilsonart® Chemsurf®

No effect was exhibited except as noted (* or **) on the following:

Acids

- | | |
|---|--|
| 1. Nitric Acid (all concentrations)** | 7. Acetic Acid (all concentrations) |
| 2. Glacial Acetic Acid 99% (concentrated) | 8. Hydrofluoric Acid 48% (concentrated)* |
| 3. Sulfuric Acid (all concentrations)** | 9. Aqua Regia |
| 4. Hydrochloric Acid (all concentrations) | 10. Chromic Trioxide (Chromic Acid Cleaning Solution)* |
| 5. Phosphoric Acid (all concentrations) | 11. Perchloric Acid (concentrated) |
| 6. Formic Acid (all concentrations) | 12. Picric Acid 1.2% (0.05M) |
| | 13. Tannic Acid (sat.) |
| | 14. Uric Acid (sat.) |

Solvents

- | | |
|----------------------------------|-------------------------|
| 15. Carbon Tetrachloride | 28. Butyl Alcohol |
| 16. Carbon Disulfide | 29. Amyl Alcohol |
| 17. Acetone | 30. Amyl Acetate |
| 18. Formaldehyde | 31. Cresol |
| 19. Methanol | 32. Dioxane |
| 20. Ethyl Acetate | 33. Trichloroethane |
| 21. Toluene | 34. Chlorobenzene |
| 22. n-Hexane | 35. Dimethylformamide |
| 23. Ethyl Alcohol | 36. Methylene Chloride |
| 24. Chloroform | 37. Methyl Ethyl Ketone |
| 25. Phenol (all concentrations)* | 38. Naphthalene |
| 26. EDTA | 39. Tetrahydrofuran |
| 27. Xylene | |

Bases

- | | | | |
|-----|---|-----|---|
| 40. | Sodium Hydroxide (all concentrations)** | 42. | Ammonium Hydroxide (all concentrations) |
| 41. | Sodium Sulfide 15% | | |

General Reagents

- | | | | |
|-----|-------------------------------------|-----|---------------------------------------|
| 43. | Sodium Hypochlorite 5% | 67. | Methyl Methacrylate |
| 44. | Calcium Hypochlorite (concentrated) | 68. | Alconox (Lab. Detergent) |
| 45. | Hydrogen Peroxide 3% | 69. | Karl Fisher Reagent |
| 46. | Trisodium Phosphate 30% | 70. | Urea |
| 47. | Sodium Thiocyanate | 71. | Naphtha |
| 48. | Zinc Chloride | 72. | Cellosolve |
| 49. | Lactated Ringers | 73. | Ammonium Phosphate |
| 50. | Sucrose 50% | 74. | Iodine |
| 51. | Gasoline | 75. | Povidone Iodine |
| 52. | Kerosene | 76. | Tincture of Mercurochrome |
| 53. | Mineral Oil | 77. | Tincture of Iodine |
| 54. | Vegetable Oils | 78. | Tincture of Merthiolate |
| 55. | Water | 79. | Eucalyptol |
| 56. | Sodium Chromate | 80. | Procaine |
| 57. | Potassium Permanganate | 81. | Zephiran Chloride |
| 58. | Silver Nitrate | 82. | Zinc Oxide Ointment |
| 59. | Formalin | 83. | Lysol |
| 60. | Benedicts Solution | 84. | Aromatic Ammonia |
| 61. | Phosphate Buffered Saline (PBS) | 85. | Thymol & Alcohol |
| 62. | Copper Sulfate | 86. | Camphorated para-chlorophenol* |
| 63. | Petroleum Jelly | 87. | Quaternary Ammonia Compounds |
| 64. | Aluminon | 88. | Monsel's Solution (Ferric Subsulfate) |
| 65. | Ethylene Glycol | 89. | Sodium Azide |
| 66. | Pine Oil | | |

Stains and Indicators

- | | | | |
|-----|-------------------------------|------|-----------------|
| 90. | Bromothymol Blue | 99. | Nigrosine |
| 91. | Phenolphthalein | 100. | Crystal Violet |
| 92. | Methyl Red | 101. | Malachite Green |
| 93. | Methyl Orange | 102. | Cresol Red |
| 94. | Ag Eosin Bluish 5% in Alcohol | 103. | Gram Stains |
| 95. | Gentian Violet 1% | 104. | Safranin O |
| 96. | Wright's Blood Stain | 105. | Thymol Blue |
| 97. | Methylene Blue | | |
| 98. | Sudan III | | |

Test procedure: Listed materials were placed in contact with Wilsonart® Chemsurf® Chemical-Resistant Laminate surface under 1" (25.4mm) diameter watch cover glass for **16 hours** duration prior to evaluation for effect.

* Causes slight change of gloss or color.

** Causes slight damage, with degree of damage proportionate to length of exposure and concentration.

4. Installation: Fabrication and Assembly Recommendations

Wilsonart Chemsurf Chemical-Resistant Laminate must be bonded to a substrate of reliable quality and appropriate fire rating, such as particleboard, incombustible cement board or plywood with one A face. Bond with adhesives, and follow the techniques recommended by the adhesive manufacturer. Permanent adhesives are recommended. Specialized PVAs, epoxy or contact cement, such as Wilsonart Adhesives, also may be used.

The substrate of a performance laminate, such as Chemsurf, should be balanced with a high-pressure phenolic laminate sheet as a backer, to reduce warping and to provide additional protection to the substrate against chemical attack from condensing fumes and runoff.

Take care to ensure an appropriate acclimation balance between the laminate and the substrate prior to fabrication. The face and backing laminates and the substrate should be conditioned in the same environment for 48 hours before fabrication.

Recommended conditioning temperature is about 75°F (24° C). Laminates should be conditioned at 50% relative humidity.

To avoid stress cracking, do not use square-cut inside corners. All inside corners should have a minimum of 1/8" (3.18mm) radius, and all edges should be routed smooth.

Methods

Assembled pieces should meet KCMA (Kitchen Cabinetmakers Manufacturers Association), ANSI-161.2-1998 specifications. Drill oversized holes for screws or bolts. Screws or bolts should be slightly countersunk into the face side of a laminate-clad substrate.

Chemsurf sheets should be cut oversize prior to layup, using a carbide-tipped saw as described in American National Standards Institute/National Electrical Manufacturers Association (ANSI/NEMA) LD3-2005, Annex A. After bonding, laminate should be machined flush on all edges.

Postforming

Postforming is the preferred edge treatment for counters vulnerable to repeated chemical attack. Chemsurf provides excellent chemical and stain resistance as stated herein and postformed edges protect the surface from chemicals accumulating in the seam. Chemsurf sheets may be formed successfully with conventional postforming machinery. Optimum bending temperature for outside radius bends is 275°F (135°C). For inside radius or cove bends, maximum recommended temperature is 325°F (163°C).

5. Warranty

Wilsonart International warrants that, under normal use and service, the material and workmanship of its laminate shall conform to the standards set forth on the applicable technical data sheets for a period of one (1) year from the date of sale to the first consumer purchaser. Dealers and distributors are provided with the technical data sheets which contain specific standards of performance for the products.

In the event that a laminate product does not perform as warranted, the first consumer purchaser's sole remedy shall be limited to repair or replacement of all or any part of the product which is defective, at the manufacturer's sole discretion.

This warranty applies only to product:

1. In its original installation; and
2. Purchased by the first consumer purchaser.

This warranty is not transferable, and expires upon resale or transfer by the first consumer purchaser. This warranty shall not apply to defects or damage arising from any of the following:

1. Accidents, abuse or misuse;
2. Exposure to extreme temperature;
3. Improper fabrication or installation; or
4. Improper maintenance.

NO OTHER WARRANTIES, EXPRESS OR IMPLIED, ARE MADE, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. UNDER NO CIRCUMSTANCES SHALL WILSONART INTERNATIONAL, INC. BE LIABLE FOR ANY LOSS OR DAMAGE ARISING FROM THE PURCHASE, USE OR INABILITY TO USE THIS PRODUCT, OR FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES. NO FABRICATOR, INSTALLER, DEALER, AGENT OR EMPLOYEE OF WILSONART INTERNATIONAL, INC. HAS THE AUTHORITY TO MODIFY THE OBLIGATIONS OR LIMITATIONS OF THIS WARRANTY.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state; therefore, some of the limitations stated above may not apply to you. It is to your benefit to save your documentation upon purchase of a product.

6. Maintenance

The decorative surface may be cleaned with warm water and mild soaps, such as those used for hands or dishes. The use of cleansers that contain abrasives, acids or alkalis may damage the decorative surface. (Note: See chemical and Stain Resistance section for more detailed information on chemical and stain resistance results.) Stubborn stains may be removed with a 1-1/2 minute exposure to hypochlorite bleach, such as Clorox®, followed by a clean water rinse. Free copies of the "Care and Maintenance Guide", which covers all Wilsonart products, are available. The guide can be accessed at <http://www.wilsonartlamine.com>, or by calling our hotline at (800) 433-3222. It can be used for your own information, for project manuals, and for provision to clients and contractors involved with interior construction and finishing.

7. Technical Services

For samples, literature, questions or technical assistance, please contact our toll-free Hotline at (800) 433-3222, Monday through Friday, 7 am –7 pm, CST.

Specification Form:

Surface shall be Wilsonart Laminate, produced by Wilsonart International, Temple, Texas 76503-6110.	
Type:	390 Postforming Grade
Surface	
Color Number:	_____
Color Name:	_____
Finish	
Number	_____
Name:	_____
Edge Trim	
Color Number:	_____
Color Name:	_____
Adhesive	
Name:	_____
Grade/Type:	_____
Brand:	Wilsonart Adhesive
<i>Material shall equal or exceed performance standards set by the American National Standards Institute/National Electrical Manufacturers Association (ANSI/NEMA) LD3-2005 for high-pressure laminate. Fabrication shall comply with "Architectural Woodwork Quality Standards, Guide Specifications and Quality Certification Program" guidelines of the Architectural Woodwork Institute.</i>	

Chemsurf TD (TD0311)

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