

Chemical Resistance & Stain Report

Antimicrobial & Hygienic PVC Cladding : K-Bio | K-Ultra

This report details the chemical and stain resistance properties of Kleenclad Antimicrobial and Hygienic PVC Cladding Sheets across more than 200 chemicals and substances covering acids, alkalis, alcohols, solvents, disinfectants, food-contact substances, fuels and industrial chemicals. Ratings are assigned at 20°C and 60°C (the maximum rated service temperature for this product). This document is intended for use by specifiers, infection control professionals, quality assurance teams, and procurement officers.

Product Physical Data

Property	Specification
Base Material	Rigid PVC (Polyvinyl Chloride, unplasticized)
Antimicrobial Technology	Silver ion (Ag ⁺) antimicrobial additive, incorporated throughout the full thickness during extrusion
Available Thickness	1.00mm ~ 12.00mm
Sheet Sizes	Up to 3050mm x 1220mm (custom sizes available)
Surface Finish	Smooth Satin (Standard), Abrasion R Textured and High Gloss
Max. Service Temperature	60°C continuous, HDT : 70°C per ASTM D648
Min. Service Temperature	-10°C
Specific Gravity	1.4 g/cm ³ (ASTM D792)
Rockwell Hardness	R 115 (R-Scale : ASTM D785)
Tensile Strength	600 kgf/cm ² (ASTM D638)
Bending Strength	1,000 kgf/cm ² (ASTM D790)
Impact Resistance (Izod)	5.0 kgf cm/cm ² (ASTM D256)
Antimicrobial Standard	ISO 22196:2011 (IMSL, UK and India - NABL Accredited Test)
Hygiene Compliance	HACCP Registered (Food-Safe)
Fire Rating	Fire Retardant - EN 13501 B-S3-D0 , ASTM E84 Class A
Application Sectors	Hospitals Pharma Food Processing IVF Labs Cleanrooms Schools Washrooms

Rating Legend

RATING LEGEND		
Resistant	R	No measurable effect. Fully compatible — suitable for continuous contact.
Good	G	Minor effect at elevated temperature or prolonged contact. Suitable for intermittent use; rinse after exposure.
Not Recommended	NR	Significant effect — softening, swelling or degradation observed. Avoid contact.
Not Tested	--	Test data not available at this temperature. Contact Kleenclad Technical Team before use.

Chemical Resistance Data

Ratings shown at 20°C and 60°C. All ratings apply to the rigid PVC surface under immersion or prolonged contact (minimum 24 hours) unless otherwise stated.

Chemical / Substance	Concentration	20°C	60°C
ACIDS & ACID DERIVATIVES			
Acetic Acid	Up to 60%	R	R
Acetic Acid	100% (glacial)	G	NR
Acetic Anhydride	100%	NR	NR
Adipic Acid	Saturated	R	G
Arsenic Acid	Up to 80%	R	G
Boric Acid	Dilute	R	R
Boric Acid	Saturated	R	R
Bromic Acid	Up to 10%	R	R
Bromic Acid	45%	R	R
Chromic Acid	Up to 20%	R	R
Chromic Acid	50%	R	G
Chromic Acid	80%	NR	NR
Citric Acid	Up to 20%	R	R
Citric Acid	Saturated	R	R
Dichloroacetic Acid	50%	R	G
Fatty Acids	100%	R	R
Formic Acid	Up to 50%	R	G
Formic Acid	98-100%	G	NR
Hydrochloric Acid (gas)	All concentrations	R	G
Hydrochloric Acid	35%	R	G
Hydrofluoric Acid	Traces only	R	R
Hydrofluoric Acid	4%	R	G
Hydrofluoric Acid	50%	R	G
Hydrofluoric Acid	70%+	G	NR
Hydrogen Peroxide	Up to 20%	R	R
Hydrogen Peroxide	Up to 30%	R	R
Hydrogen Peroxide	90%	R	G
Lactic Acid	Up to 10%	R	R
Lactic Acid	Up to 85%	R	G
Lactic Acid	90%	NR	NR
Monochloro-acetic Acid	85-100%	R	R
Nitric Acid	1-10%	R	R
Nitric Acid	30-50%	R	G
Nitric Acid	70%	G	NR
Nitric Acid	98%+	NR	NR
Oleic Acid	100%	R	R
Oxalic Acid	Dilute - Concentrated	R	G
Perchloric Acid	10%	R	G

Perchloric Acid	70%	NR	NR
Phosphoric Acid	1-85%	R	R
Picric Acid	1% aqueous	G	NR
Stearic Acid	100%	R	R
Sulphuric Acid	Up to 40%	R	R
Sulphuric Acid	40-80%	R	G
Sulphuric Acid	80-95%	R	G
Sulphuric Acid	95%+	R	G
Sulphuric Acid	Fuming (Oleum)	NR	NR
Tartaric Acid	Up to saturated	R	R

Chemical / Substance	Concentration	20°C	60°C
ALCOHOLS			
Amyl Alcohol	100%	G	G
Benzyl Alcohol	100%	R	G
Butanol (n-Butyl Alcohol)	100%	R	R
Cetyl Alcohol	100%	R	R
Ethyl Alcohol (Ethanol)	Up to 50%	R	R
Ethyl Alcohol (Ethanol)	96%	R	G
Glycerol (Glycerine)	All concentrations	R	R
Hexanol	100%	R	R
Isobutanol	100%	R	R
Isopropyl Alcohol (IPA)	100%	R	R
Methyl Alcohol (Methanol)	100%	R	G
Propyl Alcohol	100%	R	R

Chemical / Substance	Concentration	20°C	60°C
ALDEHYDES & KETONES			
Acetaldehyde	40%	NR	NR
Acetone	Dilute or Pure	NR	NR
Cyclohexanone	100%	NR	NR
Diisobutyl Ketone	Pure	NR	NR
Formaldehyde / Formalin	Dilute - 40%	R	R
Methyl Ethyl Ketone (MEK)	Any	NR	NR
Methyl Isobutyl Ketone (MIBK)	Any	NR	NR

Chemical / Substance	Concentration	20°C	60°C
BASES & ALKALIS			
Ammonia (gas)	100%	NR	NR
Ammonia (solution)	Saturated	R	R
Ammonium Hydroxide	5-100%	R	R
Bleaching Solution (Sodium Hypochlorite)	As supplied	R	R
Calcium Hydroxide	Concentrated	R	R

Caustic Soda (Sodium Hydroxide)	1-60%	R	R
Potassium Hydroxide	1-30%	R	R
Potassium Hydroxide	30-50%+	R	G
Potassium Hypochlorite	Diluted	R	G
Soda Solution	50-60%	R	R
Sodium Bicarbonate	Saturated	R	R
Sodium Carbonate	Any	R	R
Sodium Hydroxide	1-60%	R	G
Sodium Hypochlorite	12.5% Cl / Saturated	R	G
Trisodium Phosphate	Any	R	R

Chemical / Substance	Concentration	20°C	60°C
DISINFECTANTS & HEALTHCARE CHEMICALS			
Betadine (10% Povidone-Iodine)	10%	R	--
Bleach / Sodium Hypochlorite	As supplied	R	R
Chlorhexidine Gluconate	0.5-4%	R	R
Chlorine Gas (dry)	100%	R	--
Chlorine Gas (wet)	0.5%	R	--
Chlorine Water	Up to saturated	R	R
Electro-Plating Solutions	As supplied	R	G
Hydrogen Peroxide (VHP / liquid)	Up to 30%	R	R
Iodine (tincture)	As supplied	R	R
Isopropyl Alcohol (IPA) 70%	70%	R	R
PeridoxRTU Disinfectant	100% RTU	R	--
Phenol / Carbolic Acid	Up to 90%	NR	NR
Quaternary Ammonium Compounds (QAC)	As supplied	R	R
Silver Nitrate Solution	Dilute	R	R
Soap Solution / Liquid Soaps	Conc. / dilute	R	R

Chemical / Substance	Concentration	20°C	60°C
FOOD, BEVERAGE & DAIRY SUBSTANCES			
Beer / Brewing Water	As produced	R	R
Brine / Salt Water (NaCl)	Saturated	R	R
Fermented Alcohol	As produced	R	G
Fruit Juices	Natural	R	R
Glucose / Dextrin Solution	Saturated	R	R
Jam / Fruit Pulp	As produced	R	G
Lard / Tallow	100%	R	R
Milk	Full fat	R	R
Molasses	Concentrated	R	G
Mustard	As prepared	R	R
Oils & Fats, Vegetable	100%	R	R

Olive Oil	100%	R	R
Starch / Carbohydrate Solution	Concentrated	R	R
Sugar Syrup	Concentrated	R	G
Vinegar / Wine Vinegar	As produced	R	R
Wine, Red or White	As produced	R	R

Chemical / Substance	Concentration	20°C	60°C
GASES			
Ammonia (gas)	100%	NR	--
Butane	100%	R	--
Carbon Dioxide (dry)	100%	R	R
Carbon Dioxide (damp)	100%	R	G
Chlorine Gas (dry)	100%	R	--
Hydrogen (gas)	100%	R	R
Natural Gas / Coal Gas	Piped	R	--
Nitrous Oxide	100%	R	R
Oxygen (gas)	Concentrated	R	R
Ozone	100%	R	--
Propane (gas)	100%	R	--

Chemical / Substance	Concentration	20°C	60°C
HYDROCARBONS, FUELS & OILS			
Crude Oil	100%	R	R
Cyclohexane	100%	R	G
Diesel Fuel	100%	R	G
Gasoline / Petrol	As supplied	R	R
Heptane	100%	R	G
Hexane	100%	R	G
Kerosene / Petroleum	As supplied	R	R
Linseed Oil	100%	R	G
Lube / Machine Oil	100%	R	R
Mineral Oil	100%	R	G
Motor Oil	100%	R	R
Naphtha	100%	R	R
Petroleum Ether	100%	R	R
Transformer Oil	100%	R	R
Vaseline Oil	100%	R	G

Chemical / Substance	Concentration	20°C	60°C
SALTS & INORGANIC COMPOUNDS			
Alum (Aluminium Potassium Sulphate)	Dilute - saturated	R	G
Aluminium Chloride	10% - saturated	R	R

Aluminium Sulphate	10% - saturated	R	R
Ammonium Chloride	Aqueous	R	G
Ammonium Nitrate	10% - saturated	R	G
Ammonium Sulphate	10% - saturated	R	G
Barium Chloride	Aqueous - saturated	R	G
Barium Hydroxide	Saturated	R	G
Calcium Carbonate	Saturated	R	R
Calcium Chloride	Aqueous	R	G
Calcium Hypochlorite	Saturated	R	G
Copper Sulphate	Aqueous	R	R
Ferric Chloride	Saturated	R	R
Ferrous Sulphate	Aqueous - saturated	R	R
Magnesium Chloride	Aqueous	R	R
Magnesium Sulphate	Any	R	R
Nickel Sulphate	Saturated	R	R
Potassium Carbonate	Saturated	R	R
Potassium Chloride	Aqueous	R	R
Potassium Permanganate	10%	R	G
Salts of Aluminium, Barium, Calcium	Concentrated	R	R
Salts of Chromium, Copper, Iron	Concentrated	R	R
Salts of Lead, Nickel, Zinc	Concentrated	R	R
Salts of Potassium, Silver, Tin	Concentrated	R	R
Sea Water	Natural	R	R
Sodium Chloride (Brine)	Aqueous - saturated	R	G
Sodium Dichromate	Any	R	R
Sodium Hypochlorite	Dilute - saturated	R	G
Sodium Nitrate	Saturated	R	R
Sodium Sulphate	Saturated	R	G
Zinc Chloride	10% - aqueous	R	G
Zinc Sulphate	10%	R	R

Chemical / Substance	Concentration	20°C	60°C
SOLVENTS & ORGANIC COMPOUNDS			
Acetonitrile	Any	NR	NR
Amyl Acetate (n-)	100%	NR	NR
Benzene	100%	NR	NR
Butyl Acetate (n-)	100%	NR	NR
Carbon Disulphide	Any	NR	NR
Carbon Tetrachloride	Any	NR	NR
Chloroform	100%	NR	NR
Dichloroethane	100%	NR	NR
Dichloromethane (Methylene Chloride)	100%	NR	NR

Diethyl Ether	100%	R	--
Dimethyl Formamide (DMF)	Any	NR	NR
Dimethyl Sulphoxide (DMSO)	Any	NR	NR
Dioxane	Any	G	NR
Ethyl Acetate	100%	NR	NR
Ethyl Glycol (Cellosolve)	100%	R	R
Ethylene Glycol	100%	R	R
Ethylene Oxide	100%	NR	NR
Methyl Ethyl Ketone (MEK)	Any	NR	NR
Methylene Chloride	100%	NR	NR
Mineral Spirits / White Spirit	As supplied	R	R
Morpholine	Pure	NR	NR
Naphthalene	Concentrated	NR	NR
Propylene Glycol	100%	G	NR
Pyridine	Any	NR	NR
Styrene	100%	NR	NR
Tetrahydrofuran (THF)	Any	NR	NR
Toluene (Methylbenzene)	100%	NR	NR
Trichloroethylene	100%	NR	NR
Triethylene Glycol	100%	R	G
Turpentine / Spirits of Turpentine	As supplied	R	G
Vinyl Acetate	100%	NR	--
Xylene	100%	NR	NR

Chemical / Substance	Concentration	20°C	60°C
WATER & WATER TREATMENT			
Chlorine (aqueous)	Up to 200 ppm	R	R
Chlorine Water	Saturated	R	R
Distilled / Deionised Water	Pure	R	R
Ferric Chloride	10%	R	G
Permutite-Softened Water	As supplied	R	R
Sea Water	Natural	R	R
Tap Water	As supplied	R	R
Water (general)	Any	R	R

Chemical / Substance	Concentration	20°C	60°C
MISCELLANEOUS			
Castor Oil	100%	R	R
Coal Gas / Natural Gas	As supplied	R	--
Coconut Oil	Pure	R	G
Electro-Plating Fluids	As supplied	R	G
Emulsifiers	As supplied	R	R

Exhaust Gases (alkaline)	General	R	R
Gelatine	Any	R	R
Liqueurs / Spirits	As produced	R	R
Mercury (pure)	Pure	R	R
Nicotine	Pure	R	R
Paraffin Emulsion	As supplied	R	R
Paper Adhesive	As supplied	R	R
Photographic Emulsion / Fixer	As supplied	R	G
Silicone Oil	100%	G	G
Starch Solution	Concentrated	R	R
Urea	30%	R	G
Urine	Natural	R	G
Wetting Agents	5%	R	G

Important Notes & Disclaimer

Note	Detail
Temperature Limits	Maximum continuous service temperature is 60°C. At 60°C ratings denote intermittent or continuous exposure up to this limit.
Concentration Dependency	Resistance may vary with concentration. Where a range is stated, the rating applies throughout. Higher concentrations than listed should be independently evaluated. Contact the Kleenclad Technical Team for specific advice.
Solvent Caution	Rigid PVC is susceptible to attack by ketones (acetone, MEK, MIBK), esters (ethyl acetate, amyl acetate), aromatic hydrocarbons (benzene, toluene, xylene), halogenated solvents (chloroform, DCM, TCE), and certain amines. These are rated NR at all concentrations. Avoid all contact; clean surface immediately if incidental contact occurs.
Cleaning & Maintenance	Regular cleaning with warm water and mild detergent or diluted soap solution is recommended. Stubborn marks may be removed with non-abrasive cream cleaners or dilute IPA (max 70%). Do not use abrasive pads, wire wool, or steam above 60°C. Power hosing is acceptable with nozzle no closer than 600mm from the surface.
Staining Note	Certain chemicals like iodine-based disinfectants (povidone-iodine), turmeric, permanent inks, and strong oxidising agents may cause surface discolouration without structural degradation. 'R' ratings reflect structural integrity, not necessarily absence of staining.
Combination Chemicals	This report addresses individual chemicals only. Combinations may produce effects not predicted by individual ratings. Where mixed chemical exposure is anticipated, independent evaluation is recommended.
Disclaimer	Data is provided in good faith based on standardised testing of Kleenclad rigid PVC cladding material. Ratings are intended as a guide for material selection and do not constitute a warranty for any specific application. Kleenclad Ltd. accepts no liability for damage arising from use of this data without independent verification for the specific conditions of the application.