

# CHEMICAL RESISTANCE OF BELZONA® 1331

FN 10027



	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C 68 °F	Other
Inorganic Acids	Carbonic acid	H <sub>2</sub> CO <sub>3</sub> (463-79-6)	-	Ex	-
	Fluorosilicic acid	H <sub>2</sub> SiF <sub>6</sub> (16961-83-4)	-	P	-
	Hydrobromic acid	HBr (10035-10-6)	10%	M	-
	Hydrochloric acid	HCl (7647-01-0)	10% 5% 1%	M M G	- - -
	Nitric acid	HNO <sub>3</sub> (7697-37-2)	5% 1%	G Ex	- -
	Nitrous acid	HNO <sub>2</sub> (7782-77-6)	5% 1%	G Ex	- -
	Phosphoric acid (orthophosphoric acid)	H <sub>3</sub> PO <sub>4</sub> (7664-38-2)	10% 5% 1%	Ex Ex Ex	- - -
	Sulfuric acid	H <sub>2</sub> SO <sub>4</sub> (7664-93-9)	5% 1%	P M	- -
Organic Acids	Acetic acid (ethanoic acid)	CH <sub>3</sub> COOH (64-19-7)	5% 1%	P G	- -
	Chloroacetic acid	ClCH <sub>2</sub> COOH (79-11-8)	-	P	-
	Chlorosulfonic acid (sulfurochloridic acid)	HSO <sub>3</sub> Cl (7790-94-5)	-	P	-
	Citric acid	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub> (77-92-9)	10%	Ex	-
	Cresylic acid (cresol)	C <sub>7</sub> H <sub>8</sub> O (1319-77-3)	-	P	-
	Formic acid (methanoic acid)	HCOOH (64-18-6)	5%	P	-
	Lactic acid (2-hydroxypropanoic acid)	CH <sub>3</sub> CH(OH)(COOH) (50-21-5/79-33-4/10326-41-7)	10%	P	-
	Phenol	C <sub>6</sub> H <sub>5</sub> OH (108-95-2)	80%	P	-
Alcohols	n-Butanol (butyl alcohol)	C <sub>4</sub> H <sub>9</sub> OH (71-36-3)	-	Ex	-
	Ethanol (ethyl alcohol)	CH <sub>3</sub> CH <sub>2</sub> OH (64-17-5)	-	Ex	-
	Ethylene glycol (ethan-1,2-diol, monoethylene glycol, MEG)	(CH <sub>2</sub> OH) <sub>2</sub> (107-21-1)	-	Ex	-
	Glycerol (glycerine, propane-1,2,3-triol)	HOCH <sub>2</sub> CH(OH)CH <sub>2</sub> OH (56-81-5)	-	Ex	-
	Higher alcohols	C <sub>n</sub> H <sub>(2n+1)</sub> OH where n > 2	-	Ex	-
	Methanol (methyl alcohol)	CH <sub>3</sub> OH (67-56-1)	-	Ex	-

Excellent	Ex	no significant deterioration / barrier properties retained for greater than 52 weeks <i>suitable for all applications including long term immersion</i>
Good	G	no significant deterioration / barrier properties retained for 12 - 52 weeks <i>suitable for short-term immersion and general chemical contact</i>
Moderate	M	no significant deterioration / barrier properties retained for 1 - 12 weeks <i>suitable for applications involving short term chemical contact e.g. spillage, splashing or secondary containment</i>
Poor	P	significant deterioration / loss of barrier properties after 1 week or less <i>not suitable for any application</i>
*		Product must be post cured to deliver quoted chemical resistance. As for general guidance, the coating should be subjected to the following conditions as a minimum; 1hr at 100 °C/2hrs at 90 °C/4hrs at 80 °C/8hrs at 70 °C/16hrs at 60 °C. For specific recommendations, please contact Belzona.
Ex		<b>Bold</b> text highlights real life data obtained via chemical resistance testing
Ex		Normal font indicates that the resistance has been predicted based upon partial test data and/or similar reagents
Note:		Chemical resistance ratings are assigned based on the ability of a Belzona product to resist chemical attack and/or protect the underlying substrate. Belzona cannot guarantee the purity of the chemical, appearance or colour stability following contact.

# CHEMICAL RESISTANCE OF BELZONA® 1331

FN 10027



	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C 68 °F	Other
Alcohols continued	2-Methoxyethanol	C <sub>3</sub> H <sub>8</sub> O <sub>2</sub> (109-86-4)	-	Ex	-
	Isopropyl alcohol (IPA) (isopropanol, propan-2-ol)	CH <sub>3</sub> CH(OH)CH <sub>3</sub> (67-63-0)	-	Ex	-
	Propylene glycol (1,2-Propanediol)	CH <sub>3</sub> CH(OH)CH <sub>2</sub> OH (57-55-6)	-	Ex	-
	Secondary alcohols	R <sub>1</sub> R <sub>2</sub> CHOH	-	Ex	-
	Tertiary alcohols	R <sub>1</sub> R <sub>2</sub> R <sub>3</sub> COH	-	Ex	-
Alkalis	Ammonia	NH <sub>3</sub> (7664-41-7)	30%	M	-
			20%	G	-
			10%	Ex	-
			5%	Ex	-
	Barium hydroxide	Ba(OH) <sub>2</sub> (17194-00-2)	-	Ex	-
	Calcium hydroxide (lime water)	Ca(OH) <sub>2</sub> (1305-62-0)	-	Ex	-
Magnesium hydroxide (milk of magnesia)	Mg(OH) <sub>2</sub> (1309-42-8)	-	Ex	-	
Potassium hydroxide (caustic potash)	KOH (1310-58-3)	40% 20% 10%	Ex Ex Ex	- - -	
Sodium hydroxide (caustic soda)	NaOH (1310-73-2)	50% 20% 10%	Ex Ex Ex	- - -	
Amines & Amides	Aniline (Phenylamine)	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub> (62-53-3)	-	P	-
	Diethanolamine (DEA) (2,2'-iminodiethanol)	HN(CH <sub>2</sub> CH <sub>2</sub> OH) <sub>2</sub> (111-42-2)	-	Ex	-
	Diethylamine	CH <sub>3</sub> CH <sub>2</sub> NHCH <sub>2</sub> CH <sub>3</sub> (109-89-7)	-	P	-
	Diethylene glycolamine (DGA) (2-(2-aminoethoxy) ethanol)	H <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>2</sub> OH (929-06-6)	-	P	-
	Dimethylformamide	(CH <sub>3</sub> ) <sub>2</sub> NC(O)H (68-12-2)	-	P	-
	N-Methyl diethanolamine (MDEA)	CH <sub>3</sub> N(CH <sub>2</sub> CH <sub>2</sub> OH) <sub>2</sub> (105-59-9)	-	Ex	-
	Methylamine (25% in water)	CH <sub>3</sub> NH <sub>2</sub> (74-89-5)	25%	G	-
	Monoethanolamine (MEA) (2-aminoethanol)	H <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> OH (141-43-5)	-	Ex*	-
	Pyridine	C <sub>5</sub> H <sub>5</sub> N (110-86-1)	-	P	-
	Triethanolamine (TEA) (2,2',2''-nitrilotriethanol)	N(CH <sub>2</sub> CH <sub>2</sub> OH) <sub>3</sub> (102-71-6)	-	Ex	-

Excellent	Ex	no significant deterioration / barrier properties retained for greater than 52 weeks <i>suitable for all applications including long term immersion</i>
Good	G	no significant deterioration / barrier properties retained for 12 - 52 weeks <i>suitable for short-term immersion and general chemical contact</i>
Moderate	M	no significant deterioration / barrier properties retained for 1 - 12 weeks <i>suitable for applications involving short term chemical contact e.g. spillage, splashing or secondary containment</i>
Poor	P	significant deterioration / loss of barrier properties after 1 week or less <i>not suitable for any application</i>
*		Product must be post cured to deliver quoted chemical resistance. As for general guidance, the coating should be subjected to the following conditions as a minimum; 1hr at 100 °C/2hrs at 90 °C/4hrs at 80 °C/8hrs at 70 °C/16hrs at 60 °C. For specific recommendations, please contact Belzona.
Ex		<b>Bold</b> text highlights real life data obtained via chemical resistance testing
Ex		Normal font indicates that the resistance has been predicted based upon partial test data and/or similar reagents
Note:		Chemical resistance ratings are assigned based on the ability of a Belzona product to resist chemical attack and/or protect the underlying substrate. Belzona cannot guarantee the purity of the chemical, appearance or colour stability following contact.

# CHEMICAL RESISTANCE OF BELZONA® 1331

FN 10027



	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C 68 °F	Other
Beverages & Foodstuffs	Beer (Pilsner)	N/A	-	Ex	-
	Cider	N/A	-	Ex	-
	Citrus juices	N/A	-	G	-
	Fermentation liquor	N/A	-	Ex	-
	Glucose	N/A	-	Ex	-
	Milk	N/A	-	G	-
	Sugar solution	N/A	-	Ex	-
	Vinegar (5% acetic acid)	N/A	-	P	-
Whisky and Wine	N/A	-	Ex	-	
Esters & Ethers	Amyl acetate	CH <sub>3</sub> COO(CH <sub>2</sub> ) <sub>4</sub> CH <sub>3</sub> (628-63-7)	-	G	-
	Butyl acetate	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub> (123-86-4)	-	G	-
	Dibutyl adipate	[CH <sub>2</sub> CH <sub>2</sub> CO <sub>2</sub> (CH <sub>2</sub> ) <sub>3</sub> CH <sub>3</sub> ] <sub>2</sub> (105-99-7)	-	Ex	-
	Dibutyl phthalate	C <sub>16</sub> H <sub>22</sub> O <sub>4</sub> (84-74-2)	-	Ex	-
	Dibutyl sebacate	C <sub>18</sub> H <sub>34</sub> O <sub>4</sub> (109-43-3)	-	Ex	-
	Diocetyl adipate	C <sub>22</sub> H <sub>42</sub> O <sub>4</sub> (123-79-5)	-	Ex	-
	Diocetyl phthalate	C <sub>6</sub> H <sub>4</sub> (C <sub>8</sub> H <sub>17</sub> COO) <sub>2</sub> (117-81-7)	-	Ex	-
	Diocetyl sebacate	(CH <sub>2</sub> ) <sub>8</sub> (COOC <sub>8</sub> H <sub>17</sub> ) <sub>2</sub> (122-62-3)	-	Ex	-
	Diethyl ether	(C <sub>2</sub> H <sub>5</sub> ) <sub>2</sub> O (60-29-7)	-	Ex	-
	Diphenyl isodecyl phosphate	C <sub>22</sub> H <sub>31</sub> O <sub>4</sub> P (29761-21-5)	-	Ex	-
	Ethyl acetate	CH <sub>3</sub> COOCH <sub>2</sub> CH <sub>3</sub> (141-78-6)	-	G	-
	Isopropyl ether	C <sub>6</sub> H <sub>14</sub> O (108-20-3)	-	G	-
	Methyl acetate	CH <sub>3</sub> COOCH <sub>3</sub> (79-20-9)	-	G	-
Gases	Carbon dioxide (dry)	CO <sub>2</sub> (124-38-9)	-	Ex	-
	Carbon monoxide	CO (630-08-0)	-	Ex	-
	Chlorine (dry)	Cl <sub>2</sub> (7782-50-5)	-	Ex	-
	Hydrogen	H <sub>2</sub> (1333-74-0)	-	Ex	-
	Natural Gas (Methane)	CH <sub>4</sub> (74-82-8)	-	Ex	-
	Nitrogen	N <sub>2</sub> (7727-37-9)	-	Ex	-

Excellent	Ex	no significant deterioration / barrier properties retained for greater than 52 weeks <i>suitable for all applications including long term immersion</i>
Good	G	no significant deterioration / barrier properties retained for 12 - 52 weeks <i>suitable for short-term immersion and general chemical contact</i>
Moderate	M	no significant deterioration / barrier properties retained for 1 - 12 weeks <i>suitable for applications involving short term chemical contact e.g. spillage, splashing or secondary containment</i>
Poor	P	significant deterioration / loss of barrier properties after 1 week or less <i>not suitable for any application</i>
*		Product must be post cured to deliver quoted chemical resistance. As for general guidance, the coating should be subjected to the following conditions as a minimum; 1hr at 100 °C/2hrs at 90 °C/4hrs at 80 °C/8hrs at 70 °C/16hrs at 60 °C. For specific recommendations, please contact Belzona.
Ex		<b>Bold</b> text highlights real life data obtained via chemical resistance testing
Ex		Normal font indicates that the resistance has been predicted based upon partial test data and/or similar reagents
Note:		Chemical resistance ratings are assigned based on the ability of a Belzona product to resist chemical attack and/or protect the underlying substrate. Belzona cannot guarantee the purity of the chemical, appearance or colour stability following contact.

# CHEMICAL RESISTANCE OF BELZONA® 1331

FN 10027



	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C 68 °F	Other
Gases continued	Nitrous oxide (dinitrogen monoxide)	N <sub>2</sub> O (10024-97-2)	-	Ex	-
	Ozone (dry)	O <sub>3</sub> (10028-15-6)	-	Ex	-
	Ozone (aqueous solution)	O <sub>3</sub> (10028-15-6)	-	M	-
	Sulphur dioxide	SO <sub>2</sub> (7446-09-5)	-	Ex	-
	Sulphur trioxide (sulphuric anhydride)	SO <sub>3</sub> (7446-11-9)	-	Ex	-
Halocarbons	Carbon tetrachloride	CCl <sub>4</sub> (56-23-5)	-	M	-
	Chlorobenzene	C <sub>6</sub> H <sub>5</sub> Cl (108-90-7)	-	M	-
	Chloroform	CHCl <sub>3</sub> (67-66-3)	-	M	-
	Methylene chloride (dichloromethane)	CH <sub>2</sub> Cl <sub>2</sub> (75-09-2)	-	P	-
	Perchloroethylene (tetrachloroethylene)	Cl <sub>2</sub> C=CCl <sub>2</sub> (127-18-4)	-	G	-
	1,1,1, - Trichloroethane (methyl chloroform)	CH <sub>3</sub> CCl <sub>3</sub> (71-55-6)	-	G	-
Hydrocarbons	Aviation fuel (AVCAT, AVGAS, AVTAG, AVTUR)	N/A	-	Ex	-
	Benzene (benzol)	C <sub>6</sub> H <sub>6</sub> (71-43-2)	-	G	-
	Cyclohexane	C <sub>6</sub> H <sub>12</sub> (110-82-7)	-	G	-
	Gasoline – Ethanol free (Petrol)	N/A	-	Ex	-
	Gasoline – Ethanol containing (Petrol)	N/A	-	Ex	-
	Heptane	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> (142-82-5)	-	Ex	-
	Hexane	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> (110-54-3)	-	Ex	-
	Iso-octane (2,2,4-trimethylpentane)	(CH <sub>3</sub> ) <sub>3</sub> CCH <sub>2</sub> CH(CH <sub>3</sub> ) <sub>2</sub> (540-84-1)	-	Ex	-
	Kerosene	N/A (8008-20-6)	-	Ex	-
	Paraffin	N/A (8002-74-2)	-	Ex	-
Pentane	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> (109-66-0)	-	Ex	-	

Excellent	Ex	no significant deterioration / barrier properties retained for greater than 52 weeks <i>suitable for all applications including long term immersion</i>
Good	G	no significant deterioration / barrier properties retained for 12 - 52 weeks <i>suitable for short-term immersion and general chemical contact</i>
Moderate	M	no significant deterioration / barrier properties retained for 1 - 12 weeks <i>suitable for applications involving short term chemical contact e.g. spillage, splashing or secondary containment</i>
Poor	P	significant deterioration / loss of barrier properties after 1 week or less <i>not suitable for any application</i>
*		Product must be post cured to deliver quoted chemical resistance. As for general guidance, the coating should be subjected to the following conditions as a minimum; 1hr at 100 °C/2hrs at 90 °C/4hrs at 80 °C/8hrs at 70 °C/16hrs at 60 °C. For specific recommendations, please contact Belzona.
Ex		<b>Bold</b> text highlights real life data obtained via chemical resistance testing
Ex		Normal font indicates that the resistance has been predicted based upon partial test data and/or similar reagents
Note:		Chemical resistance ratings are assigned based on the ability of a Belzona product to resist chemical attack and/or protect the underlying substrate. Belzona cannot guarantee the purity of the chemical, appearance or colour stability following contact.

# CHEMICAL RESISTANCE OF BELZONA® 1331

FN 10027



	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C 68 °F	Other
Hydrocarbons continued	Styrene	C <sub>6</sub> H <sub>5</sub> CH=CH <sub>2</sub> (100-42-5)	-	G	-
	Toluene (methylbenzene, phenylmethane, toluol)	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub> (108-88-3)	-	Ex	-
	White Spirit (Stoddard solvent, Mineral spirits)	N/A (8052-41-3)	-	Ex	-
	Xylene (dimethyl benzene, xylol)	C <sub>6</sub> H <sub>4</sub> (CH <sub>3</sub> ) <sub>2</sub> (95-47-6/108-38-3/106-42-3/1330-20-7)	-	G	-
Ketones	Acetone	(CH <sub>3</sub> ) <sub>2</sub> CO (67-64-1)	-	P	-
	Methyl ethyl ketone (MEK, butanone)	CH <sub>3</sub> C(O)CH <sub>2</sub> CH <sub>3</sub> (78-93-3)	-	P	-
Miscellaneous	Brake fluid	N/A	-	Ex	-
	Drilling mud	N/A	-	Ex	-
	Emulsion paint	N/A	-	Ex	-
	Fertilizer solutions	N/A	-	Ex	-
	Grease	N/A	-	Ex	-
	Ink (water based)	N/A	-	Ex	-
	Mercury	Hg (7439-97-6)	-	Ex	-
	Mine waters (acid)	N/A	-	Ex	-
	Oil/water mixtures	N/A	-	Ex	-
	Water, distilled	N/A	-	Ex	-
	Water, fresh	N/A	-	Ex	-
Water, sea	N/A	-	Ex	-	
Oils - Mineral	Bunker oils (fuel oils)	N/A	-	Ex	-
	Crude oil	N/A	-	Ex	-
	Cutting oils, water emulsions	N/A	-	Ex	-
	Diesel oil	N/A	-	Ex	-
	Lubricating oil	N/A	-	Ex	-
	Transformer oil	N/A	-	Ex	-
Oils - Vegetable/ Animal	Castor oil	N/A	-	Ex	-
	Coconut oil	N/A	-	Ex	-
	Cod liver oil	N/A	-	Ex	-
	Corn oil	N/A	-	Ex	-
	Linseed oil	N/A	-	Ex	-
	Olive oil	N/A	-	Ex	-

Excellent	Ex	no significant deterioration / barrier properties retained for greater than 52 weeks <i>suitable for all applications including long term immersion</i>
Good	G	no significant deterioration / barrier properties retained for 12 - 52 weeks <i>suitable for short-term immersion and general chemical contact</i>
Moderate	M	no significant deterioration / barrier properties retained for 1 - 12 weeks <i>suitable for applications involving short term chemical contact e.g. spillage, splashing or secondary containment</i>
Poor	P	significant deterioration / loss of barrier properties after 1 week or less <i>not suitable for any application</i>
*		Product must be post cured to deliver quoted chemical resistance. As for general guidance, the coating should be subjected to the following conditions as a minimum; 1hr at 100 °C/2hrs at 90 °C/4hrs at 80 °C/8hrs at 70 °C/16hrs at 60 °C. For specific recommendations, please contact Belzona.
Ex		<b>Bold</b> text highlights real life data obtained via chemical resistance testing
Ex		Normal font indicates that the resistance has been predicted based upon partial test data and/or similar reagents
Note:		Chemical resistance ratings are assigned based on the ability of a Belzona product to resist chemical attack and/or protect the underlying substrate. Belzona cannot guarantee the purity of the chemical, appearance or colour stability following contact.

# CHEMICAL RESISTANCE OF BELZONA® 1331

FN 10027



	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C 68 °F	Other
Salts	Aluminium chloride	AlCl <sub>3</sub> (7446-70-0)	10%	Ex	-
	Aluminium sulphate	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> (10043-01-3)	10%	Ex	-
	Ammonium chloride	NH <sub>4</sub> Cl (12125-02-9)	10%	Ex	-
	Ammonium sulfate	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> (7783-20-2)	10%	G	-
	Copper sulphate	CuSO <sub>4</sub> (7758-98-7)	10%	Ex	-
	Ferric chloride	FeCl <sub>3</sub> (7705-08-0)	40%	Ex	-
	Ferric sulfate	Fe <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> (10028-22-5)	50%	Ex	-
	Ferrous chloride	FeCl <sub>2</sub> (7758-94-3)	25%	G	-
	Ferrous sulfate	FeSO <sub>4</sub> (7720-78-7)	25%	M	-
	Sodium hypochlorite (bleach)	NaClO (7681-52-9)	12%	G	-
	Sodium nitrate	NaNO <sub>3</sub> (7631-99-4)	10%	Ex	-
	Sodium sulfate	Na <sub>2</sub> SO <sub>4</sub> (7757-82-6)	10%	Ex	-
	Sodium sulfide	Na <sub>2</sub> S (1313-82-2)	10%	Ex	-

Excellent	Ex	no significant deterioration / barrier properties retained for greater than 52 weeks <i>suitable for all applications including long term immersion</i>
Good	G	no significant deterioration / barrier properties retained for 12 - 52 weeks <i>suitable for short-term immersion and general chemical contact</i>
Moderate	M	no significant deterioration / barrier properties retained for 1 - 12 weeks <i>suitable for applications involving short term chemical contact e.g. spillage, splashing or secondary containment</i>
Poor	P	significant deterioration / loss of barrier properties after 1 week or less <i>not suitable for any application</i>
*		Product must be post cured to deliver quoted chemical resistance. As for general guidance, the coating should be subjected to the following conditions as a minimum; 1hr at 100 °C/2hrs at 90 °C/4hrs at 80 °C/8hrs at 70 °C/16hrs at 60 °C. For specific recommendations, please contact Belzona.
Ex		<b>Bold</b> text highlights real life data obtained via chemical resistance testing
Ex		Normal font indicates that the resistance has been predicted based upon partial test data and/or similar reagents
Note:		Chemical resistance ratings are assigned based on the ability of a Belzona product to resist chemical attack and/or protect the underlying substrate. Belzona cannot guarantee the purity of the chemical, appearance or colour stability following contact.

The technical data contained herein is based on the results of long term tests carried out in our laboratories and to the best of our knowledge is true and accurate on the date of publication. It is however, subject to change without prior notice and the user should contact Belzona to verify the technical data is correct before specifying or ordering. No guarantee of accuracy is given or implied. We assume no responsibility for rates of coverage, performance or injury resulting from use. Liability, if any, is limited to the replacement of products. No other warranty or guarantee of any kind is made by Belzona, express or implied, whether statutory, by operation of law or otherwise, including merchantability or fitness for a particular purpose. Nothing in the foregoing statement shall exclude or limit any liability of Belzona to the extent such liability cannot by law be excluded or limited.