

# CHEMICAL RESISTANCE OF BELZONA® 1593

FN10151



				Chemical Resistance			
	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C	60 °C	90 °C	Other
				68 °F	140 °F	194 °F	
Inorganic Acids	Hydrochloric acid	HCl (647-01-0)	20%	Ex	Ex	M	-
			10%	Ex	Ex	M	-
			5%	Ex	Ex	Ex	-
			3%	Ex	Ex	Ex	-
	Nitric acid	HNO <sub>3</sub> (7697-37-2)	10%	Ex	G	G	-
	Nitrous acid	HNO <sub>2</sub> (7782-77-6)	10%	Ex	G	G	-
	Phosphoric acid (orthophosphoric acid)	H <sub>3</sub> PO <sub>4</sub> (7664-38-2)	10%	Ex	Ex	Ex	-
			5%	Ex	Ex	Ex	-
	Sulphuric acid	H <sub>2</sub> SO <sub>4</sub> (7664-93-9)	20%	M	Ex	G	-
			10%	Ex	Ex	G	-
5%			Ex	Ex	Ex	-	
3%			Ex	Ex	Ex	-	
Organic Acids	Acetic acid (ethanoic acid)	CH <sub>3</sub> COOH (64-19-7)	10%	Ex*	P	P	-
			5%	Ex*	M	P	-
	Carbonic acid	H <sub>2</sub> CO <sub>3</sub> (463-79-6)	-	Ex	Ex	Ex	-
Phenol (hydroxybenzene)	C <sub>6</sub> H <sub>5</sub> OH (108-95-2)	80%	M*	P	P	-	

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 @ minimum temperature of 140°F (60°C) to deliver quoted chemical resistance
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

# CHEMICAL RESISTANCE OF BELZONA® 1593

FN10151



				Chemical Resistance			
	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C	60 °C	90 °C	Other
				68 °F	140 °F	194 °F	
Alcohols, Aldehydes and Ketones	Acetone (propanone)	(CH <sub>3</sub> ) <sub>2</sub> CO (67-64-1)	-	Ex	-	-	-
	Amyl alcohol	C <sub>5</sub> H <sub>11</sub> OH (71-41-0)	-	Ex	Ex	Ex	-
	n-Butanol (butyl alcohol)	C <sub>4</sub> H <sub>9</sub> OH (71-36-3)	-	Ex	Ex	Ex	-
	Ethanol (ethyl alcohol)	CH <sub>3</sub> CH <sub>2</sub> OH (64-17-5)	-	Ex	Ex	-	-
	Ethylene glycol (ethan-1,2-diol, monoethylene glycol, MEG)	(CH <sub>2</sub> OH) <sub>2</sub> (107-21-1)	-	Ex	Ex	Ex	-
	Glycerol (glycerine, propane-1,2,3-triol)	HOCH <sub>2</sub> CH(OH)CH <sub>2</sub> OH (56-81-5)	-	Ex	Ex	Ex	-
	n-Hexanol (hexyl alcohol)	C <sub>6</sub> H <sub>13</sub> OH (111-27-3)	-	Ex	Ex	Ex	-
	Higher alcohols	C <sub>n</sub> H <sub>(2n+1)</sub> OH where n > 2	-	Ex	Ex	Ex	-
	Isopropyl alcohol (IPA) (isopropanol, propan-2-ol)	CH <sub>3</sub> CH(OH)CH <sub>3</sub> (67-63-0)	-	Ex	Ex	-	-
	Isobutyl alcohol (IBA) (isobutanol, 2-methylpropan-1-ol)	(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> OH (78-83-1)	-	Ex	Ex	Ex	-
	Methanol (methyl alcohol)	CH <sub>3</sub> OH (67-56-1)	-	Ex	Ex	-	-
	Methanol solution (aqueous)	CH <sub>3</sub> OH <sub>(aq)</sub> (67-56-1)	55%	Ex	Ex	-	79 °C 174 °F Ex
	Methyl ethyl ketone (MEK) (2-butanone, methyl acetone)	CH <sub>3</sub> C(O)CH <sub>2</sub> CH <sub>3</sub> (78-93-3)	-	Ex	G	-	-

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 @ minimum temperature of 140°F (60°C) to deliver quoted chemical resistance
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

# CHEMICAL RESISTANCE OF BELZONA® 1593

FN10151



				Chemical Resistance			
	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C	60 °C	90 °C	Other
				68 °F	140 °F	194 °F	
Alcohols, Aldehydes and Ketones	Propan-1-ol (Propyl alcohol)	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> OH (71-23-8)	-	Ex	Ex	Ex	-
	Propylene glycol (1,2-Propanediol)	CH <sub>3</sub> CH(OH)CH <sub>2</sub> OH (57-55-6)	-	Ex	Ex	Ex	-
	Secondary alcohols	R <sub>1</sub> R <sub>2</sub> CHOH	-	Ex	Ex	Ex	-
	Tertiary alcohols	R <sub>1</sub> R <sub>2</sub> R <sub>3</sub> COH	-	Ex	Ex	Ex	-
	Triethylene glycol (triglycol)	HOCH <sub>2</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>2</sub> OH (112-27-6)	-	Ex	Ex	Ex	-
	Tetraethylene glycol (tetraglycol)	HOCH <sub>2</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>2</sub> OH (112-60-7)	-	Ex	Ex	Ex	-
Alkalis / Bases	Barium hydroxide	Ba(OH) <sub>2</sub> (17194-00-2)	-	Ex	Ex	Ex	-
	Calcium hydroxide (lime water)	Ca(OH) <sub>2</sub> (1305-62-0)	-	Ex	Ex	Ex	-
	Magnesium hydroxide (milk of magnesia)	Mg(OH) <sub>2</sub> (1309-42-8)	-	Ex	Ex	Ex	-
	Potassium hydroxide (caustic potash)	KOH (1310-58-3)	40%	Ex	Ex	Ex	-
			20%	Ex	Ex	Ex	-
10%			Ex	Ex	Ex	-	
Sodium hydroxide (caustic soda)	NaOH (1310-73-2)	50%	Ex	Ex	Ex	-	
		40%	Ex	Ex	Ex	-	
		20%	Ex	Ex	Ex	-	
		10%	Ex	Ex	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 @ minimum temperature of 140°F (60°C) to deliver quoted chemical resistance
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

# CHEMICAL RESISTANCE OF BELZONA® 1593

FN10151



				Chemical Resistance			
	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C	60 °C	90 °C	Other
				68 °F	140 °F	194 °F	
Amines & Amides	Diethanolamine (DEA) (2,2'-iminodiethanol)	HN(CH <sub>2</sub> CH <sub>2</sub> OH) <sub>2</sub> (111-42-2)	-	Ex	Ex	Ex	-
	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)	-	Ex	Ex	Ex	-
	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	Ex	Ex	-
	N-Methylethanolamine (2-methylaminoethanol)	CH <sub>3</sub> NHCH <sub>2</sub> CH <sub>2</sub> OH (109-83-1)	-	Ex	Ex	Ex	-
	Monoethanolamine (MEA) (2-aminoethanol)	H <sub>2</sub> NCH <sub>2</sub> CH <sub>2</sub> OH (141-43-5)	-	Ex	Ex	Ex	-
	Sulfinol solution (50% diisopropanolamine, 25% tetramethylene sulphone, 25% water)	N/A	-	Ex	Ex	Ex	-
	Triethanolamine (TEA) (2,2',2''-nitrilotriethanol)	N(CH <sub>2</sub> CH <sub>2</sub> OH) <sub>3</sub> (102-71-6)	-	Ex	Ex	Ex	-
Esters and Ethers	Butyl acetate (butyl ethanoate)	CH <sub>3</sub> C(O)OCH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> (123-86-4)	-	Ex	Ex	Ex	-
	Dibutyl phthalate (DBP) (phthalic acid dibutyl ester)	C <sub>6</sub> H <sub>4</sub> (C(O)OCH <sub>2</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> ) <sub>2</sub> (84-74-2)	-	Ex	Ex	Ex	-
	Diethyl ether (ether, ethoxyethane)	CH <sub>3</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>3</sub> (60-29-7)	-	Ex	-	-	-
	Diocetyl phthalate (DOP) (bis(2-ethylhexyl) phthalate, DEHP)	C <sub>6</sub> H <sub>4</sub> (C(O)OCH <sub>2</sub> CH(CH <sub>2</sub> CH <sub>3</sub> )CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> ) <sub>2</sub> (117-81-7)	-	Ex	Ex	Ex	-
	Ethyl acetate (ethyl ethanoate, acetic ester)	CH <sub>3</sub> C(O)OCH <sub>2</sub> CH <sub>3</sub> (141-78-6)	-	Ex	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 @ minimum temperature of 140°F (60°C) to deliver quoted chemical resistance
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

# CHEMICAL RESISTANCE OF BELZONA® 1593

FN10151



			Chemical Resistance				
	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C	60 °C	90 °C	Other
				68 °F	140 °F	194 °F	
Gases	Butane	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub> (106-97-8)	-	Ex	Ex	Ex	-
	Carbon dioxide	CO <sub>2</sub> (124-38-9)	-	Ex	Ex	Ex	-
	Carbon monoxide	CO (630-08-0)	-	Ex	Ex	Ex	-
	Chlorine (dry)	Cl <sub>2</sub> (7782-50-5)	-	Ex	Ex	Ex	-
	Ethane	C <sub>2</sub> H <sub>6</sub> (74-84-0)	-	Ex	Ex	Ex	-
	Hydrogen	H <sub>2</sub> (1333-74-0)	-	Ex	Ex	Ex	-
	Hydrogen sulphide	H <sub>2</sub> S (7783-06-4)	-	Ex	Ex	Ex	-
	Methane (natural gas)	CH <sub>4</sub> (74-82-8)	-	Ex	Ex	Ex	-
	Nitrogen	N <sub>2</sub> (7727-37-9)	-	Ex	Ex	Ex	-
	Nitrous oxide (dinitrogen monoxide)	N <sub>2</sub> O (10024-97-2)	-	Ex	Ex	Ex	-
	Ozone (dry)	O <sub>3</sub> (10028-15-6)	-	Ex	Ex	Ex	-
	Ozone (wet)	O <sub>3</sub> (10028-15-6)	-	G*	M	M	-

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 @ minimum temperature of 140°F (60°C) to deliver quoted chemical resistance
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

# CHEMICAL RESISTANCE OF BELZONA® 1593

FN10151



				Chemical Resistance			
	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C 68 °F	60 °C 140 °F	90 °C 194 °F	Other
Gases	Sulphur dioxide	SO <sub>2</sub> (7446-09-5)	-	Ex	Ex	Ex	-
	Sulphur trioxide (sulphuric anhydride)	SO <sub>3</sub> (7446-11-9)	-	Ex	Ex	Ex	-
Halocarbons	Chlorobenzene (benzene chloride, phenyl chloride)	C <sub>6</sub> H <sub>5</sub> Cl (108-90-7)	-	Ex	G	M	-
	Chloroform (trichloromethane)	HCCL <sub>3</sub> (67-66-3)	-	Ex	-	-	-
	Dichloromethane (DCM) (methylene chloride)	CH <sub>2</sub> Cl <sub>2</sub> (75-09-2)	-	Ex*	-	-	-
Hydrocarbons	Aviation fuel (AVCAT, AVGAS, AVTAG, AVTUR)	N/A	-	Ex	Ex	Ex	-
	Benzene (benzol)	C <sub>6</sub> H <sub>6</sub> (71-43-2)	-	Ex	Ex	-	-
	Crude Oil	N/A	-	Ex	Ex	Ex	-
	Cyclohexane	C <sub>6</sub> H <sub>12</sub> (110-82-7)	-	Ex	Ex	-	-
	Gasoline (without Ethanol) (petrol)	N/A (8032-32-4)	-	Ex	Ex	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> (142-82-7)	-	Ex	Ex	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	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	Ex	Ex	-
	Kerosene	N/A (8008-20-6)	-	Ex	Ex	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 @ minimum temperature of 140°F (60°C) to deliver quoted chemical resistance
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

# CHEMICAL RESISTANCE OF BELZONA® 1593

FN10151



				Chemical Resistance			
	Chemical name (Synonym)	Chemical formula (CAS number)	Concentration	20 °C	60 °C	90 °C	Other
				68 °F	140 °F	194 °F	
Hydrocarbons continued	Mesitylene (1,3,5-Trimethylbenzene)	C <sub>6</sub> H <sub>3</sub> (CH <sub>3</sub> ) <sub>3</sub> (108-67-8)	-	Ex	Ex	Ex	-
	Mineral spirits / White spirits (Stoddard solvent)	N/A (8052-41-3)	-	Ex	Ex	Ex	-
	Naphtha	N/A (8030-30-6)	-	Ex	Ex	Ex	-
	Naphthalene (naphthalin, white tar)	C <sub>10</sub> H <sub>8</sub> (91-20-3)	-	Ex	Ex	Ex	-
	Paraffin	N/A (8002-74-2)	-	Ex	Ex	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	-	-	-
	Toluene (methylbenzene, phenylmethane, toluol)	C <sub>6</sub> H <sub>5</sub> CH <sub>3</sub> (108-88-3)	-	Ex	Ex	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)	-	Ex	Ex	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 @ minimum temperature of 140°F (60°C) to deliver quoted chemical resistance
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

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.