

**VOLUME 45A** 

## **Chemical Resistance of Roofing Asphalt**

Since the discovery of natural asphalt deposits more than 5,000 years ago, asphalt has proved to be one of nature's most useful – and abundant – materials. It has been used successfully as an excellent natural preservative, as well as an outstanding waterproofing and adhesive agent for centuries. For over 150 years, asphalt has proven to be one of the most popular roofing materials in North America.

Asphalt is now obtained as a residue of the distillation of petroleum crude oil. As such, it is the highest molecular weight fraction of petroleum. Asphalts are very complex oil mixtures that can be separated into four fractions, namely the saturates, the aromatics, the resins and the asphaltenes, each fraction being a mixture in its own. The chemical composition of asphalt and its fractions vary with the source and the refining of the crude oil. This composition governs asphalt properties, including ease of oxidation, miscibility with polymers, and durability amongst others.

Roofing asphalt is considered to have good resistance to a wide variety of chemicals and compounds. However, most of the information regarding chemical resistance has been empirically derived. It is generally accepted that:

- 1. resistance to chemical attack increases with the hardness (measured by penetration) of the asphalt,
- 2. chemical resistance decreases with time, temperature and the concentration of the chemical.

The following table is a compilation of data from the Shell Bitumen Industrial Handbook (Shell Bitumen, UK). It provides some information on the resistance of asphalt to various chemicals. Two asphalts may not have the exact same resistance to a given chemical. One would not normally encounter most of these substances in the roofing environment, particularly at the concentrations and at the temperatures listed in the tables. Notwithstanding, this bulletin provides guidelines regarding the chemical resistance of an asphalt based roof cover. Final selection of the roofing system should be based on anticipated service conditions in consultation with the manufacturer or supplier.



X – Do Not Use (not recommended)

C — Conditional (consult supplier) Blank — No Information

Acetic Acid (Liquid) $\boxed{\text{Temp } ({}^{\circ}\text{C})$ $<25$ $25 - 75$ $>75$ $<50$ A       X $\geq 50$ C $x$ Acetic Anhydride $\boxed{\text{Temp } ({}^{\circ}\text{C})}$ $<25$ $25 - 75$ $>75$ $<50$ Concentration (%)       X $\geq 50$ $x$ $x$ Acetone $\boxed{\text{Temp } ({}^{\circ}\text{C})}$ $<25$ $25 - 75$ $>75$ $<50$ C       X $x$ $\geq 250$ $x$ $x$ Acetone $\boxed{\text{Temp } ({}^{\circ}\text{C})$ $<25$ $25 - 75$ $>75$ $<50$ $x$ $x$ Aluminum Chloride $\boxed{\text{Temp } ({}^{\circ}\text{C})$ $<25$ $25 - 75$ $>75$ $<50$ $A$ $=$ $250$ $A$ $=$ <th></th> <th></th> <th>Con</th> <th>centration (%)</th> <th></th>			Con	centration (%)			
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Alums (Aluminum potassium sulphate)Temp ( $^{\mathbb{Q}}$ C)<2525 - 75>75<50		≥50	А				
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	Ammonium Acetate	Temp (ºC)	<25	25 — 75	>75		
≥50 C C C			С		С		
		≥50	С	С	С		



# A — Good Chemical Resistance X — Do Not Use (not recommended)

		Сог	ncentration (%)	
Ammonium Bicarbonate	Temp (ºC)	<25	25 - 75	>75
	<50	А		
	≥50	А		
			-	
		Сог	ncentration (%)	
Ammonium Carbonate	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
		Cor	ncentration (%)	
Ammonium Chloride	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
			•	
		Сог	ncentration (%)	
Ammonium hydroxide	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
			·	
		Concentration (%)		
Ammonium Nitrate	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
		Cor	ncentration (%)	
Ammonium Persulphate	Temp (ºC)	<25	25-75	>75
	<50	А		
	≥50	А		
		Cor	ncentration (%)	
Ammonium Sulphate	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
			ncentration (%)	
Amyl Acetate	Temp (ºC)	<25	25 — 75	>75
	<50			X
	≥50			
			ncentration (%)	
Amyl Alcohol	Temp (ºC)	<25	25 — 75	>75
	<50			A
	≥50			



X - Do Not Use (not recommended)

Amyl chloride         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ $<50$ $<$ $×$ $\geq 50$ $×$ Aniline         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Aniline         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Aniline         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Aniline Sulphate         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Animal Fats         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Animal Fats         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Aqua Regia nitric acid: hydrochloric acid (3:1)         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Aviation Fuel         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Aviation Fuel         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Aviation Turbine Fuel         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Barium Carbonate         Temp ( $^{\circ}$ C) $<25$ $25 - 75$ $>75$ Barium		Г	Со	ncentration (%)	
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Aniline       Temp ( $^{\circ}C$ ) $<25$ $25 - 75$ $>75$ $<50$ $<$ $X$ $\geq 50$ $<$ $X$ Aniline Sulphate       Temp ( $^{\circ}C$ ) $<225$ $25 - 75$ $>75$ $<50$ $A$ $X$ $>50$ $A$ $X$ Aniline Sulphate       Temp ( $^{\circ}C$ ) $<225$ $25 - 75$ $>75$ $<50$ $A$ $X$ $>50$ $A$ $X$ Animal Fats       Temp ( $^{\circ}C$ ) $<225$ $25 - 75$ $>75$ $<50$ $X$ $=$ $=$ $=$ $=$ Aqua Regia       Temp ( $^{\circ}C$ ) $<225$ $25 - 75$ $>75$ $<50$ $X$ $=$ $=$ $=$ $=$ Aqua Regia       Temp ( $^{\circ}C$ ) $<225$ $25 - 75$ $>75$ $<50$ $X$ $=$ $=$ $=$ $=$ Aviation Fuel       Temp ( $^{\circ}C$ ) $<225$ $25 - 75$ $>75$ $<50$ $X$ $=$ $=$ $C$ $>$ $>$ Aviation Turbine Fuel	2				Х
Aniline         Temp ( $^{\mathbb{P}}$ C) $< 25$ $25 - 75$ $>75$ $< 50$ $X$ $\geq 50$ $X$ Aniline Sulphate         Temp ( $^{\mathbb{P}}$ C) $< 25$ $25 - 75$ $>75$ $< 50$ A $X$ $\geq 50$ A $X$ Aniline Sulphate         Temp ( $^{\mathbb{P}}$ C) $< 25$ $25 - 75$ $>75$ $< 50$ A $X$ $\geq 50$ A $X$ Animal Fats         Temp ( $^{\mathbb{P}$ C) $< 25$ $25 - 75$ $>75$ $< 50$ X $X$ $X$ $X$ Aqua Regia         Temp ( $^{\mathbb{P}$ C) $< 25$ $25 - 75$ $>75$ $< 50$ X $X$ $X$ $X$ $X$ Aviation Fuel         Temp ( $^{\mathbb{P}$ C) $< 25$ $25 - 75$ $>75$ $< 50$ X $X$ $X$ $X$ $X$ Aviation Fuel         Temp ( $^{\mathbb{P}$ C) $< 25$ $25 - 75$ $>75$ $< 50$ X $X$ $X$ $X$		≥50			
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$\begin{array}{ c c c c c c } \hline \geq 50 & A & \hline & \hline$	Aniline Sulphate			25 — 75	
Animal Fats $\hline Concentration (%)$ $\hline Temp (%C)$ $<25$ $<50$ $\times$ $>75$ $<50$ $\times$ Aqua Regia nitric acid: hydrochloric acid (3:1) $\hline Temp (%C)$ $<50$ $<50$ $\times$ $<25$ $<50$ $\times$ $>75$ $<50$ $\times$ Aviation Fuel $\hline Temp (%C)$ $<25$ $<50$ $\times$ $<25$ $<25 - 75$ $<75$ $<75$ $<75$ $<75$ Aviation Fuel $\hline Temp (%C)$ $<25$ $<50$ $\times$ $<25$ $<25 - 75$ $<75$ $<75$ $<75$ $<75$ Aviation Turbine Fuel $\hline Temp (%C)$ $<25$ $<50$ $\times$ $<25$ $<25 - 75$ $<75$ $<75$ $<50$ $\times$ $<100$ $<100$ Barium Carbonate $\hline Temp (%C)$ $<25$ $<25$ $<25 - 75$ $<75$ $<50$ $<75$ $<50$ $<75$ $<50$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$ $<75$					X
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Animal Fats       Temp ( $^{\mathbb{Q}}$ C) $<25$ $25 - 75$ $>75$ $<50$ X		г		· · · · · · · · · · · · · · · · · · ·	
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Aqua Regia nitric acid: hydrochloric acid (3:1)Temp ( $^{\circ}C$ ) $<25$ $25 - 75$ > $75$ Aviation Fuel $\leq 50$ X $=$ Aviation FuelTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ > $75$ $<50$ X $=$ Aviation FuelTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ > $75$ $<50$ X $=$ $=$ Aviation Turbine FuelTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ > $75$ $<50$ X $=$ $=$ Aviation Turbine FuelTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ > $75$ $<50$ X $=$ $=$ Barium CarbonateTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ > $75$ $<50$ $=$ $=$ $=$ Barium ChlorideTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ > $75$					
Aqua Regia nitric acid: hydrochloric acid (3:1) $\overline{\text{Temp}} (^{\circ}\text{C})$ $<25$ $25 - 75$ $>75$ $<50$ X $<$		≥50	X		
Aqua Regia nitric acid: hydrochloric acid (3:1) $\overline{\text{Temp}} (^{\circ}\text{C})$ $<25$ $25 - 75$ $>75$ $<50$ X $<$		Г	C_	noontration (9/)	
nitric acid: hydrochloric acid (3:1) Aviation Fuel Aviation Fuel $ \begin{array}{c c c c c c c c c c c c c c c c c c c $	A sue De sie			. ,	> 75
acid (3:1) $\geq 50$ X $\square$ Concentration (%)Aviation FuelTemp (°C) $<25$ $25 - 75$ $>75$ $<50$ X $\square$ $\geq 50$ X $\square$ Aviation Turbine FuelTemp (°C) $<25$ $25 - 75$ $>75$ $<50$ X $\square$ $\geq 50$ X $\square$ Barium CarbonateTemp (°C) $<25$ $25 - 75$ $>75$ $<50$ X $\square$ Barium ChlorideTemp (°C) $<25$ $25 - 75$ $>75$	· -			25-75	>/5
Aviation FuelTemp ( $^{\circ}$ C) $<25$ $25-75$ $>75$ $<50$ X $<$ $\geq 50$ X $<$ Aviation Turbine FuelTemp ( $^{\circ}$ C) $<25$ $25-75$ $>75$ $<50$ X $<$ Aviation Turbine FuelTemp ( $^{\circ}$ C) $<25$ $25-75$ $>75$ $<50$ X $<$ $<$ Barium CarbonateTemp ( $^{\circ}$ C) $<25$ $25-75$ $>75$ $<50$ X $<$ $<$ Barium ChlorideTemp ( $^{\circ}$ C) $<25$ $25-75$ $>75$	-				
Aviation FuelTemp ( $^{\circ}$ C) $<25$ $25 - 75$ >75 $<50$ X $\\ \geq 50$ X $\\ \hline \\ \hline$	aciu (5.1)	200	Λ		
Aviation FuelTemp ( $^{\circ}$ C) $<25$ $25 - 75$ >75 $<50$ X $\\ \geq 50$ X $\\ \hline \\ \hline$		Г	Co	ncentration (%)	
$<50$ X $\geq 50X\geq 50XAviation Turbine FuelTemp (^{\circ}C)<2525 - 75>75<50X\geq 50XBarium CarbonateTemp (^{\circ}C)<2525 - 75>75<50A\leq 50A\leq 50A<$	A viation Fuel	Temp (ºC)			>75
$\geq 50$ XAviation Turbine FuelTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ $>75$ $<50$ X $<$ $\geq 50$ X $<$ $\geq 50$ X $<$ Barium CarbonateTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ $>75$ $<50$ X $<$ $<$ Barium ChlorideTemp ( $^{\circ}C$ ) $<25$ $25 - 75$ $>75$ $<50$ $<$ $<$ $<$ $<$ $<25$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ $<$ <td< td=""><td>A viation 1 del</td><td></td><td></td><td>20 /0</td><td>210</td></td<>	A viation 1 del			20 /0	210
Aviation Turbine FuelTemp ( $^{\circ}C$ )<2525 - 75>75<50					
Aviation Turbine FuelTemp ( $^{\circ}C$ )<2525 - 75>75<50					
Aviation Turbine FuelTemp ( $^{\circ}C$ )<2525 - 75>75<50		Г	Co	ncentration (%)	
$<50$ X $\geq 50X\geq 50XBarium CarbonateTemp (^{\circ}C)<2525 - 75>75<50A\geq 50A\geq 50AConcentration (%)Temp (^{\circ}C)<2525 - 75>75Concentration (%)Temp (^{\circ}C)<2525 - 75>75$	Aviation Turbine Fuel	Temp (ºC)		. , ,	>75
$\geq 50$ XBarium CarbonateTemp (°C)<2525 - 75 $<50$ <10					
Barium CarbonateTemp ( $^{\circ}C$ )<2525 - 75>75<50					
Barium CarbonateTemp ( $^{\circ}C$ )<2525 - 75>75<50		L			
$<50$ A $\geq 50$ AConcentration (%)Temp (°C)<25			Co	ncentration (%)	
≥50         A           Concentration (%)           Barium Chloride         Temp (°C)         <25	Barium Carbonate	Temp (ºC)	<25	25 — 75	>75
Concentration (%)           Barium Chloride         Temp (°C)         <25         25 - 75         >75		<50			Α
Barium Chloride         Temp (⁰C)         <25         25 - 75         >75		≥50			A
Barium Chloride         Temp (⁰C)         <25         25 - 75         >75					
50 1	Barium Chloride			25 — 75	>75
		<50	Α		
≥50 A		≥50	А		



X – Do Not Use (not recommended)

	[	Cor	centration (%)	
Barium hydroxide	Temp (ºC)	<25	25 - 75	>75
2	<50	А		A
	≥50	А		
		Cor	centration (%)	
Beer	Temp (ºC)	<25	25 — 75	>75
	<50			A
	≥50			A
	,			
			centration (%)	
Benzaldehyde	Temp (ºC)	<25	25 — 75	>75
	<50			X
	≥50			X
	r			
D	Tamar (00)		centration (%)	75
Benzene	Temp (ºC)	<25	25-75	>75
	<50	v	N/	X
	≥50	X	X	X
	ſ	Cor	centration (%)	
Benzene Sulphonic Acid	Temp (ºC)	<25	25 - 75	>75
Belizene Sulphonie Acid	<50	X	X	X
	≥50	X X	X	X
	]	Cor	centration (%)	
Benzoic Acid	Temp (ºC)	<25	25-75	>75
	<50	Α		A
	≥50	А		
			1	
		Cor	centration (%)	
Benzyl Alcohol	Temp (ºC)	<25	25 — 75	>75
	<50	С	C	C
	≥50	С	C	C
	<b>T</b> (25)		centration (%)	
Bleach Liquors	Temp (ºC)	<25	25 - 75	>75
	<50			X
	≥50	С		
	r			1
P	Tame (00)		centration (%)	. 75
Borax	Temp (ºC)	<25	25 — 75	>75
	<50	<u>C</u>		
	≥50	С		



# A – Good Chemical Resistance X – Do Not Use (not recommended)

		Со	ncentration (%)	
Boric Acid	Temp (ºC)	<25	25 - 75	>75
	<50	С		
	≥50	С		
	L			
		Co	ncentration (%)	
Brine	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
			ncentration (%)	
Bromine (dry)	Temp (ºC)	<25	25 — 75	>75
	<50			Х
	≥50			
				1
_			ncentration (%)	
Bromine (wet)	Temp (ºC)	<25	25 - 75	>75
	<50			Х
	≥50			
	_			
	<b>T</b> (20)	Concentration (%)		
Butyl Acetate	Temp (ºC)	<25	25 — 75	>75
	<50			Х
	≥50			
	_	0.	n a antration (O()	
D	<b>T</b> - mar. (0 <b>C</b> )		ncentration (%)	75
Butyric Acid	Temp (ºC)	<25	25 - 75	>75
	<50	A	С	Х
	≥50	С		
	Г	C_	ncentration (%)	
Butone (liquid)		<25	25 – 75	>75
Butane (liquid)	Temp (ºC) <50		20-75	>10
	≥50	C C		
	250	C		
	Г	Co	ncentration (%)	
Butyl Alcohol	Temp (ºC)	<25	25 - 75	>75
Butyl Alcohol	<50	C	20-70	210
	≥50	C		
	200	C		
	Γ	Co	ncentration (%)	
Calcium Chlorate	Temp (ºC)	<25	25 - 75	>75
	<50	A		A
	≥50	A		п
	200	А		



X – Do Not Use (not recommended)

	[	Cor	ncentration (%)	
Calcium Chloride	Temp (ºC)	<25	25-75	>75
	<50	А		A
	≥50	А		A
			ncentration (%)	
Calcium Hydroxide	Temp (ºC)	<25	25 — 75	>75
	<50	А		A
	≥50	A		
	r	Co	$\alpha$	
Calainer Hannahlarita			ncentration (%) 25 – 75	. 75
Calcium Hypochlorite bleach	Temp (ºC)	<25	25 - 75	>75
	<50	С		
	≥50	С		
	ī	0	· · · · · · · · · · · · · · · · · · ·	
			ncentration (%)	. 75
Calcium Sulphate	Temp (ºC) <50	<25	25 - 75	>75
				A
	≥50			A
	[	Cor	ncentration (%)	
Camphor	Temp (ºC)	<25	25 - 75	>75
,	<50			X
	≥50			
			·	
			centration (%)	
Carbon Dioxide	Temp (ºC)	<25	25 — 75	>75
(dry ice)	<50			A
	≥50			A
	[	Cor	ncentration (%)	
Carbon Disulphide	Temp (ºC)	<25	25-75	>75
	<50	X		X
	≥50	X		
		Cor	ncentration (%)	
Carbon Monoxide	Temp (ºC)	<25	25 — 75	>75
	<50			A
	≥50			A



X – Do Not Use (not recommended)

	Γ	Cor	ncentration (%)	
Carbon Tetrachloride	Temp (ºC)	<25	25 - 75	>75
	<50	Х		Х
	≥50	Х		
		Cor	ncentration (%)	
Carbolic Acid (Phenol)	Temp (ºC)	<25	25 — 75	>75
	<50	С	X	
	≥50	Х		
	-			
			ncentration (%)	
Castor Oil	Temp (ºC)	<25	25 — 75	>75
	<50		С	
	≥50	Х		
	F			1
			ncentration (%)	
Chloracetic Acid	Temp (ºC)	<25	25 — 75	>75
	<50	С		X
	≥50	Х		
	г		(0()	
	T (00)		ncentration (%)	
Chlorine Dioxide	Temp (ºC)	<25	25 - 75	>75
Bleach	<50	X		
	≥50	X		
	Concentration (%)			
Chlorine Gas	Temp (ºC)	<25	25 – 75	>75
Chionne Gas	<50	<25	23-75	X
	≥50		X	Λ
	200		Λ	
	Г	Cor	ncentration (%)	
Chlorine Water	Temp (ºC)	<25	25-75	>75
Chiefine (rule)	<50	C		
	≥50			
	Γ	Cor	ncentration (%)	
Chlorobenzene	Temp (ºC)	<25	25-75	>75
	<50			X
	≥50	С		
	Γ	Cor	ncentration (%)	
Chlorofoam	Temp (ºC)	<25	25-75	>75
	<50	С		Х
	≥50	С		



X - Do Not Use (not recommended)

		Cor	ncentration (%)	
Chlorosulfonic Acid	Temp (ºC)	<25	25 — 75	>75
	<50			X
	≥50			
		Cor	ncentration (%)	
Chromic/sulfuric Acid	Temp (ºC)	<25	25-75	>75
	<50	С		
	≥50	С		
		Cor	ncentration (%)	
Chromic Acid	Temp (ºC)	<25	25 - 75	>75
	<50	С	X	
	≥50	Х		
		Cor	ncentration (%)	
Citric Acid	Temp (ºC)	<25	25 - 75	>75
	<50	А		A
	≥50	А		
		Concentration (%)		
Copper Chloride	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
		Cor	ncentration (%)	
Copper Cyanide	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
		Cor	ncentration (%)	
Copper Sulphate	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
			ncentration (%)	
Cresylic Acid	Temp (ºC)	<25	25 — 75	>75
	<50			X
	≥50			
			_	
			centration (%)	
Cylcohexanol	Temp (ºC)	<25	25 - 75	>75
	<50	С		
	≥50	С		



X - Do Not Use (not recommended)

	Γ	Co	ncentration (%)	
Cyclohexanone	Temp (ºC)	<25	25-75	>75
-	<50	С		
	≥50	С		
	·			
	[	Co	ncentration (%)	
Decalin	Temp (ºC)	<25	25-75	>75
	<50	Х		
	≥50	Х		
		Co	ncentration (%)	
Dibutyl Phthalate	Temp (ºC)	<25	25 — 75	>75
	<50	С		
	≥50	С		
	_			
		Co	ncentration (%)	
Dichloroethylene	Temp (ºC)	<25	25 — 75	>75
	<50	Х		
	≥50	Х		
	-			
			ncentration (%)	
Diesel Oil	Temp (ºC)	<25	25 - 75	>75
	<50	Х		
	≥50	Х		
	-			
			ncentration (%)	
Ethyl Ether	Temp (ºC)	<25	25 — 75	>75
	<50			X
	≥50			
	г			
	<b>T</b> (00)		ncentration (%)	
Ethyl Acetate	Temp (ºC)	<25	25 - 75	>75
	<50			X
	≥50			
	Г		nontration (0/)	
			ncentration (%) 25 – 75	. 75
Ethyl Alcohol	Temp (ºC)	<25	25-75	>75
	<50 ≥50	<u>A</u>		
	200	А		
	Г	Co	ncentration (%)	
Ethyl Chlorida	Temp (ºC)	<25	25 – 75	>75
Ethyl Chloride	<50	<20	20-70	>75 X
	≥50			Λ
	200			



X – Do Not Use (not recommended)

	[	Concentration (%)		
Ethylene Chlorohydrin	Temp (ºC)	<25	25-75	>75
	<50			Х
	≥50			
			centration (%)	
Ethylene Dichloride	Temp (ºC)	<25	25 — 75	>75
	<50			X
	≥50			
	г			
	<b>—</b> (00)		centration (%)	
Ethylene Glycol	Temp (ºC)	<25	25 — 75	>75
	<50			A
	≥50			Α
	г	0		
	T (00)		centration (%)	75
Fatty Acids	Temp (ºC)	<25	25 — 75	>75
	<50			X
	≥50			
	Г	Cor	centration (%)	
Ferric Chloride	Temp (ºC)	<25	25 – 75	>75
reme Chionde	<50	A	23-73	
	≥50	A		A
	200	А		л
	[	Concentration (%)		
Ferric Nitrate	Temp (ºC)	<25	25 – 75	>75
Terrie Tuttate	<50	A		A
	≥50	A		A
	[	Cor	centration (%)	
Ferric Sulphate	Temp (ºC)	<25	25-75	>75
	<50	А		Α
	≥50	А		Α
		Cor	centration (%)	
Ferrous Chloride	Temp (ºC)	<25	25 - 75	>75
	<50	А		А
	≥50	А		А
	-			
			centration (%)	
Ferrous Sulphate	Temp (ºC)	<25	25 — 75	>75
	<50	Α		A
	≥50	Α		Α



X - Do Not Use (not recommended)

	Γ	Co	ncentration (%)	
Fluorine	Temp (ºC)	<25	25 - 75	>75
	<50			X
	≥50			
	L			
		Co	ncentration (%)	
Formaldehyde	Temp (ºC)	<25	25 - 75	>75
	<50	А		
	≥50	А		
			·	
		Co	ncentration (%)	
Formic Acid	Temp (ºC)	<25	25 — 75	>75
	<50	А	Α	X
	≥50	С		
		Co	ncentration (%)	
Fuel Oil	Temp (ºC)	<25	25 — 75	>75
	<50	Х		
	≥50	Х		
	_			
		Co	ncentration (%)	
Furfural	Temp (⁰C)	<25	25 — 75	>75
	<50			X
	≥50			
	_			
		Co	ncentration (%)	
Gasoline	Temp (ºC)	<25	25 — 75	>75
	<50	Х		X
	≥50			
			ncentration (%)	
Glycerin	Temp (ºC)	<25	25 — 75	>75
	<50			A
	≥50			A
	_			
			ncentration (%)	
Heptane	Temp (ºC)	<25	25 — 75	>75
	<50	Х		
	≥50	Х		
	_			1
			ncentration (%)	
Haxane	Temp (ºC)	<25	25 — 75	>75
	<50	Х		
	≥50	X		



X – Do Not Use (not recommended)

	]	Con	centration (%)	
Hydrobromic Acid	Temp (ºC)	<25	25 - 75	>75
	<50	С	Х	
	≥50	Х		
	[	Con	centration (%)	
Hydrochloric Acid	Temp (ºC)	<25	25 — 75	>75
	<50	А	А	
	≥50	С	С	
		Con	centration (%)	
Hydrocyanic Acid	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	А		
			centration (%)	
Hydrofluoric Acid	Temp (ºC)	<25	25 — 75	>75
	<50	Х		
	≥50			
	r			
			centration (%)	
Hydrogen	Temp (ºC)	<25	25 — 75	>75
	<50			A
	≥50			A
	r			
	<b>T</b> (20)		centration (%)	
Hydrogen Chloride	Temp (ºC)	<25	25 — 75	>75
Anhydrous	<50	Х		
	≥50			
	r			
TT 1 TH 1	Tama (00)		centration (%)	75
Hydrogen Fluoride	Temp (ºC)	<25	25 — 75	>75
Anhydrous	<50	X		
	≥50			
	Г	0	contration (9/)	
Hudrooon Derevide	Temp (ºC)	<25	centration (%) 25 – 75	>75
Hydrogen Peroxide	<50	<25 C	25-75	>10
	<50 ≥50	<u> </u>		
	250	Λ		
	Г	Con	centration (%)	]
Hydrogen Sylphide	Temp (ºC)	<25	25 – 75	>75
Hydrogen Sulphide	<50	A	23-75	A
	≥50			
	200	Α		A



X – Do Not Use (not recommended)

		Cor	centration (%)	
Hypchlorous Acid	Temp (ºC)	<25	25 — 75	>75
	<50	А		
	≥50	С		
			1	
	Concentration (%)			
Iodine	Temp (ºC)	<25	25 — 75	>75
	<50			Х
	≥50			
		Cor	centration (%)	
Ketones	Temp (ºC)	<25	25 - 75	>75
	<50	С		
	≥50	Х		
		Cor	centration (%)	
Lactic Acid	Temp (ºC)	<25	25-75	>75
	<50	А		
	≥50			
		Cor	centration (%)	
Lead Acetate	Temp (ºC)	<25	25 - 75	>75
	<50	А		Α
	≥50	А		
		Cor	centration (%)	
Linseed Oil	Temp (ºC)	<25	25 — 75	>75
	<50	С		
	≥50	Х		
		Cor	centration (%)	
Lubricating Oil	Temp (ºC)	<25	25 — 75	>75
	<50	Х		
	≥50	Х		
			centration (%)	
Magnesium Carbonate	Temp (ºC)	<25	25 — 75	>75
	<50			A
	≥50			
			centration (%)	
Magnesium Chloride	Temp (ºC)	<25	25 — 75	>75
	<50	А		A
	≥50	А		A



X - Do Not Use (not recommended)

		Con	centration (%)		
Magnesium Chloride	Temp (ºC)	<25	25-75	>75	
c	<50	Α		Α	
	≥50	А		Α	
		Concentration (%)			
Magnesium Sulphate	Temp (ºC)	<25	25 — 75	>75	
	<50	А		А	
	≥50	А		А	
			centration (%)		
Maleic Acid	Temp (ºC)	<25	25 — 75	>75	
	<50	X		X	
	≥50				
		-			
	T (00)		centration (%)		
Mercury	Temp (ºC)	<25	25 — 75	>75	
	<50			A	
	≥50			A	
		Con	centration (%)		
Mercuric Chloride	Temp (ºC)	<25	25 - 75	>75	
Melcune Chionde	<50	A	20-70	A	
	≥50	A		A	
	200	71		11	
		Con	centration (%)		
Mercurous Chloride	Temp (ºC)	<25	25-75	>75	
	<50	А		Α	
	≥50	А		Α	
		Con	centration (%)		
Methyl Ethyl Ketone	Temp (ºC)	<25	25 — 75	>75	
	<50	С		Х	
	≥50				
	_		centration (%)		
Methyl Alcohol	Temp (ºC)	<25	25 — 75	>75	
	<50			Α	
	≥50			Α	
		-		1	
	T		centration (%)		
Methylene Chloride	Temp (ºC)	<25	25 — 75	>75	
	<50	C			
	≥50	Х			



X - Do Not Use (not recommended)

	Г	Con	centration (%)	
Milk (and byproducts)	Temp (ºC)	<25	25 - 75	>75
	<50			
	≥50			
	<u> </u>			
		Con	centration (%)	
Mineral Oil	Temp (ºC)	<25	25 — 75	>75
	<50	Х		
	≥50	Х		
	-			
	T (00)		centration (%)	
Naphthal	Temp (ºC)	<25	25 — 75	>75
	<50			X
	≥50			
	г	0		
			centration (%)	. 75
Napththalene	Temp (°C)	<25	25 — 75	>75
	<50			X
	≥50			
	Concentration (%)			
Nickel Chloride	Temp (ºC)	<25	25 – 75	>75
	<50	A	20 / 0	A
	≥50	A		A
	Γ	Con	centration (%)	
Nickel Nitrate	Temp (ºC)	<25	25-75	>75
	<50	А		Α
	≥50	А		Α
		Con	centration (%)	
Nickel Sulphate	Temp (ºC)	<25	25 — 75	>75
	<50	Α		A
	≥50	А		А
	-			
<b>A</b> .T., 1			centration (%)	75
Nitric Acid	Temp (ºC)	<25	25 — 75	>75
	<50	C		
	≥50	X		
	Г	Con	centration (%)	]
Nitrobenzene	Temp (ºC)	<25	25 – 75	>75
TATTOOCHZCHC	<50	×25 X	20-70	210
	≥50	Α		
	200			



X - Do Not Use (not recommended)

	Concentration (%)				
Nitrous Acid	Temp (ºC)	<25	25-75	>75	
	<50	А			
	≥50	А			
	Concentration (%)				
Oleic Acid	Temp (ºC)	<25	25 — 75	>75	
	<50			Х	
	≥50				
			ncentration (%)		
Olive Oil	Temp (ºC)	<25	25 — 75	>75	
	<50	С			
	≥50	Х			
			ncentration (%)		
Oxalic Acid	Temp (ºC)	<25	25 — 75	>75	
	<50	А		А	
	≥50	Α			
	_				
		Concentration (%)			
Oxidizing Gases	Temp (ºC)	<25	25 — 75	>75	
	<50			Х	
	≥50				
	_				
			ncentration (%)		
Ozone	Temp (ºC)	<25	25 — 75	>75	
	<50	C			
	≥50	Х			
	_				
D 62	T		ncentration (%)	75	
Paraffin	Temp (ºC)	<25	25 - 75	>75	
	<50	X			
	≥50	Х			
		0-	noontuotion (0/)		
D			ncentration (%)	. 75	
Paraffin Wax	Temp (°C)	<25	25 - 75	>75	
	<50		C		
	≥50		X		
	L	0-	noontration (0/)	]	
Danahlani- A-i-l			ncentration (%)	> 7E	
Perchloric Acid	Temp (⁰C)	<25	25 – 75	>75	
	<50	Х			
	≥50				



X - Do Not Use (not recommended)

		Con	centration (%)		
Phenol	Temp (ºC)	<25	25 - 75	>75	
	<50	С	Х		
	≥50				
		Con	centration (%)		
Phosphoric Acid	Temp (ºC)	<25	25 — 75	>75	
	<50	А		Α	
	≥50	А		Α	
			centration (%)		
Phthalic Anhydride	Temp (ºC)	<25	25 — 75	>75	
	<50			A	
	≥50			С	
			centration (%)		
Potassium Bicarbonate	Temp (ºC)	<25	25 — 75	>75	
	<50	A		A	
	≥50	A		A	
	Concentration (%)				
Potassium Carbonate	Temp (ºC)	<25	25 — 75	>75	
	<50	A		A	
	≥50	A		A	
	1	Con	centration (%)		
Potassium Chloride	Temp (ºC)	<25	25 – 75	>75	
Fotassium Chioride	<50	A	23-75	A	
	≥50	A		A	
	200	А		Л	
		Con	centration (%)		
Potassium Dichromate	Temp (ºC)	<25	25 – 75	>75	
I otassiani Dienioniae	<50	A	20 /0	210	
	≥50	A			
		Concentration (%)			
Potassium Ferrocyanide	Temp (ºC)	<25	25-75	>75	
<b>,</b>	<50	А			
	≥50	A			
			1		
		Con	centration (%)		
Potassium Hydroxide	Temp (ºC)	<25	25 - 75	>75	
•	<50	А			
	≥50	А			



X – Do Not Use (not recommended)

		Con	centration (%)		
Potassium Nitrate	Temp (ºC)	<25	25-75	>75	
	<50	А		A	
	≥50	А			
		Concentration (%)			
Potassium Permanganate	Temp (ºC)	<25	25 — 75	>75	
	<50	Х			
	≥50				
			centration (%)		
Potassium Persulphate	Temp (ºC)	<25	25 — 75	>75	
	<50	Α			
	≥50	А			
		-			
			centration (%)		
Postassium Sulphate	Temp (ºC)	<25	25 — 75	>75	
	<50	Α		A	
	≥50	Α		A	
		-			
	<b>T</b> (00)	Concentration (%)			
Propylene Dichloride	Temp (ºC)	<25	25 - 75	>75	
	<50	Х			
	≥50				
		0	(0()		
	T (00)		centration (%)		
Pyridine	Temp (ºC)	<25	25 - 75	>75	
	<50	Х			
	≥50				
	1	Con	contration (9/)		
Silicone Oil		<25	centration (%) 25 – 75	>75	
Shicone Oh	Temp (ºC) <50	<20		>/5	
	<50 ≥50		C C		
	200		L L		
	1	Con	centration (%)		
Silver Nitrate	Temp (ºC)	<25	25 – 75	>75	
Shiver Initiate	<50	A	20 /0	A	
	≥50	A		A	
	_00	п		п	
		Con	centration (%)		
Sodium Acetate	Temp (ºC)	<25	25 - 75	>75	
Solian Produce	<50	A		A	
	≥50	A		A	
		11		11	



X - Do Not Use (not recommended)

	[	Сог	ncentration (%)	
Sodium Bicarbonate	Temp (ºC)	<25	25-75	>75
	<50	А		А
	≥50	А		А
		Concentration (%)		
Sodium Bisulphate	Temp (ºC)	<25	25 — 75	>75
	<50	Α		Α
	≥50	А		Α
	,			
			ncentration (%)	
Sodium Bisulphite	Temp (ºC)	<25	25-75	>75
	<50	A		A
	≥50	А		Α
	r	0	· · · · · · · · · · · · · · · · · · ·	
G 1' D 1			ncentration (%)	. 75
Sodium Bromide	Temp (ºC) <50	<25	25-75	>75
		<u>A</u>		Α
	≥50	Α		
	[	Сог	ncentration (%)	
Sodium Carbonate	Temp (ºC)	<25	25-75	>75
	<50	A		A
	≥50	А		Α
	[	Со	ncentration (%)	
Sodium Chloride	Temp (ºC)	<25	25 - 75	>75
	<50	А		А
	≥50	А		А
	,			
			ncentration (%)	
Sodium Cyanide	Temp (ºC)	<25	25 - 75	>75
	<50	A		A
	≥50	А		
	1	Co	ncentration (%)	
Sodium Hydroxide	Temp (ºC)	<25	25 - 75	>75
(caustic soda)	<50	A	23-75	A
(caustic solia)	≥50	A		C
	200	А		C
	]	Co	ncentration (%)	
Sodium Hypochlorite	Temp (ºC)	<25	25 - 75	>75
	<50	C		
	≥50			



X - Do Not Use (not recommended)

	[	centration (%)			
Sodium Nitrate	Temp (ºC)	<25	25 - 75	>75	
	<50	А		Α	
	≥50	А		Α	
		Con	centration (%)		
Sodium Nitrite	Temp (ºC)	<25	25 — 75	>75	
	<50	А		А	
	≥50	А		А	
		Con	centration (%)		
Sodium Sulphate	Temp (ºC)	<25	25 — 75	>75	
	<50	Α		A	
	≥50	А		Α	
			centration (%)		
Sodium Sulphate	Temp (ºC)	<25	25 — 75	>75	
	<50	A		A	
	≥50	Α		A	
	r				
		Concentration (%)			
Sodium Sulphide	Temp (ºC)	<25	25 — 75	>75	
	<50	A			
	≥50	А			
	r				
	T		centration (%)	75	
Sodium Sulphite	Temp (ºC)	<25	25 — 75	>75	
	<50	A			
	≥50	А			
	1	Con	contration (9/)		
Stannic Chloride		<25	centration (%) 25 – 75	>75	
Stannic Chioride	Temp (ºC) <50	<20	25-75	×75 X	
	≥50			Λ	
	230				
	1	Con	centration (%)		
Stannous Chloride	Temp (ºC)	<25	25 – 75	>75	
Stannous Chionde	<50	A	20 10	210	
	≥50	Α			
	_00				
	[	Con	centration (%)		
Sulphated Detergents	Temp (ºC)	<25	25 – 75	>75	
- mpilling Dowigonto	<50	A	A	A	
	≥50	A	A		
	_00	11	11		



# A – Good Chemical Resistance X – Do Not Use (not recommended)

	]	Сог	ncentration (%)	
Sulphur	Temp (ºC)	<25	25-75	>75
	<50		С	
	≥50	С		
	[	Cor	ncentration (%)	
Sulphur Dioxide	Temp (ºC)	<25	25-75	>75
r	<50			Α
	≥50			Α
		Cor	ncentration (%)	
Sulphur Trioxide	Temp (ºC)	<25	25-75	>75
<sup>^</sup>	<50	Х		
	≥50			
		Cor	ncentration (%)	
Sulphuric Acid	Temp (ºC)	<25	25 - 75	>75
-	<50	А	C	
	≥50	С	X	
	[	Cor	ncentration (%)	
Tallow	Temp (ºC)	<25	25 — 75	>75
	<50	С		
	≥50	С		
		Cor	ncentration (%)	
Tannic Acid	Temp (ºC)	<25	25 — 75	>75
	<50	А		Α
	≥50	А		
			•	
		Cor	ncentration (%)	
Tartaric Acid	Temp (ºC)	<25	25 — 75	>75
	<50	А		Α
	≥50	А		
			ncentration (%)	
Toluene	Temp (ºC)	<25	25 — 75	>75
	<50	Х		
	≥50	Х		
			ncentration (%)	
Trisodium Phosphate	Temp (ºC)	<25	25 — 75	>75
	<50	Α		Α
	≥50	А		Α
	≥50	А		A



X – Do Not Use (not recommended)

#### C – Conditional (consult supplier) Blank – No Information

	[	Concentration (%)			
Tuprentine	Temp (ºC)	<25	25-75	>75	
	<50	Х			
	≥50	Х			
		Con	centration (%)		
Vegetable Oil	Temp (ºC)	<25	25 — 75	>75	
	<50	Х			
	≥50	Х			
		Con	centration (%)		
Xylene	Temp (ºC)	<25	25 — 75	>75	
	<50	Х			
	≥50	Х			
		Con	centration (%)		
Zinc Chloride	Temp (ºC)	<25	25 — 75	>75	
	<50	А		Α	
	≥50	А		Α	
		Con	centration (%)		
Zinc Sulphate	Temp (ºC)	<25	25 — 75	>75	
	<50	Α		Α	
	≥50	Α		Α	

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