

# MATERIAL COMPATIBILITY

**Ratings-chemical effect**

- A - No effect - Excellent
- B - Minor effect - Good
- C - Moderate effect - Fair
- D - Severe effect - Not recommended

**Explanation of footnotes**

1. Satisfactory to 72°F
2. Satisfactory to 120°F
3. Satisfactory for O-rings

	CPVC	Epoxy	Polypropylene	Polyethylene	PVC	Cyolac ® (ABS)	Phenolic	Nylon	Noryl ®	Delrin ® (Acetal)	Ryton ® to 200°F	Kynar ® (PVDF)	Teflon ®	Stainless steel (316)	Stainless steel (304)	Stainless steel (440)	Titanium	Carpenter 20	Cast bronze	Cast iron	Aluminum	Hastelloy C	Carbon,ceramic	Caramagnet A	Viton ®	Buna N	Neoprene ®	Nitrile	Natural rubber	Hypalon ®	EPDM	Kel-F®	Tygon	Silicone	Ceramic	Carbon/graphite			
Actadehyde	D	A	A	C	D	D	A	A	A <sup>1</sup>	A	D	A	A	A	-	A	-	A	C	B	A	A	-	D	D	C	D	C	C	A	A	D	A	A	A	A			
Acetamide	-	A	A <sup>1</sup>	A	D	-	D	A	D	B <sup>1</sup>	A	C	A	A	B	-	-	-	D	D	-	-	-	-	B	A	B	A	D	B	C	A	A	D	B	A	A		
Acetate Solvent	C	A	D	A	D	-	D	A	D	A	A	A	A	A	A	A	A	A	C	D	A	-	-	-	D	C	D	C	C	C	C	C	C	A	A	D	C	A	A
Acetic Acid, Glacial	C	B <sup>1</sup>	A <sup>1</sup>	A <sup>2</sup>	D	D	D	D	A	C	A	A <sup>1</sup>	A	A	C	D	A	A	C	D	A	A	A	-	D	C	D	C	B	C	B	A <sup>2</sup>	D	B	A	A	A		
Acetic acid 20%	A	A	A	A	D	C	C	B	A	B	A	A	A	A	B	D	A	A	C	D	A	A	A	-	B	B	A	B	B	A	A	A	D	B	A	A	A		
Acetic Acid 80%	C	C	A	A <sup>2</sup>	D	D	D	D	A	C	A	C	A	A	C	D	A	A	C	D	A	A	A	-	B	C <sup>3</sup>	C	C	B	C	A	A	D	B	A	A	A		
Acetic Acid	C	C	B	A <sup>2</sup>	D	D	D	D	A	C	A	C	A	A	C	D	A	A	C	D	A	A	A	-	B	C <sup>3</sup>	C	C	B	C	A	A	D	C	A	A	A		
Acetic Anhydride	D	A	B <sup>1</sup>	D	D	D	A	A <sup>1</sup>	D	D	A	B <sup>1</sup>	A	A	A	D	A	B	C	-	A <sup>1</sup>	A	A	-	D	D	A	D	B	A	B	A	D	C	A	A	A		
Acetone	D	D	A	B <sup>1</sup>	D	D	A	A	D	C	A	D	A	A	A	B	A	A	A	A	A	A	A	A	-	D	D	C	D	C	B	A	A	D	B	A	A	A	
Acetyl Chloride (dry)	C	A	-	D	C	D	-	D	D	D	A	A <sup>2</sup>	A	A	A	-	-	B	-	-	A	A	A	-	A	D	D	D	D	D	D	A	D	C	-	-	-		
Acetylene	C	A	A <sup>1</sup>	A	A <sup>1</sup>	-	A	A	-	-	A	A	A	A	A	-	-	A	C	A	A	-	-	A	A	B	B	B	B	B	B	A	A	-	-	B	A	A	
Acrylonitrile	A	A	A	A	-	D	D	A	-	-	-	A <sup>1</sup>	A	A <sup>1</sup>	A <sup>1</sup>	-	-	A <sup>1</sup>	-	A <sup>1</sup>	B <sup>1</sup>	B	A	A	D	D	C	D	D	C	D	-	-	-	D	A	B		
Alcohol: Amyl	A <sup>2</sup>	D	B <sup>1</sup>	B <sup>2</sup>	A <sup>2</sup>	-	A	A <sup>1</sup>	C	A	A	A	A	A	A	-	-	B	A	A	-	B	A	A	-	B	B	A	B	B	A	A	B	D	A	A	A	A	
Alcohol: Benzyl	A	A <sup>1</sup>	A	D	D	D	A	D	D	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>	-	-	A	A	A	B <sup>2</sup>	A	A	-	A	D	C	D	D	B	B	A	B	-	A	-	-		
Alcohol: Butyl	A <sup>2</sup>	A	A	A	A <sup>2</sup>	-	C	A	A	A	A	-	A	A	A	-	-	A	A	D	B	A	A	-	A	A	A	B	A	A	B	-	B	B	A	-	-		
Alcohol: Diacetone	-	A	B <sup>2</sup>	B <sup>1</sup>	B <sup>1</sup>	-	A	A	A	A	-	A <sup>1</sup>	A	A	A	-	-	A	A	A	A <sup>1</sup>	A	A	-	D	D	D	D	D	A	-	-	-	D	A	A	A		
Alcohol: Ethyl	A <sup>1</sup>	A <sup>2</sup>	A	B	C	B	A	A	A	B	-	-	A	A	A	A	A	A	A	A	B	A	A	A	-	A	C	A	C	A	A	A	-	C	B	A	-	-	
Alcohol: Hexyl	-	A	-	A	A <sup>2</sup>	-	A	A	A	A	-	-	A	A	A	-	-	A	A	A	A	A	A	-	C	A	A	A	A	B	C	-	-	-	B	A	-	-	
Alcohol: Isobutyl	-	A	A <sup>1</sup>	A <sup>2</sup>	A <sup>1</sup>	B	C	A <sup>1</sup>	A	A	-	-	A <sup>2</sup>	A	A	-	-	B	A	C	B	A	A	-	A	B	A	B	A	A	A	-	-	-	A	A	A		
Alcohol: Isopropyl	A <sup>2</sup>	A	A <sup>2</sup>	A <sup>2</sup>	A <sup>1</sup>	-	A	B <sup>1</sup>	A <sup>1</sup>	A	-	-	A <sup>2</sup>	A	A	-	-	A	A	C	B	B	A	-	A	B	B	B	B	A	A	-	-	-	A	A	A		
Alcohol: Methyl	A <sup>1</sup>	B <sup>1</sup>	A <sup>2</sup>	A <sup>1</sup>	B <sup>1</sup>	-	A	A	A <sup>1</sup>	C	A	A	A	A	A	B <sup>1</sup>	B	A	A	A	A <sup>1</sup>	A	A	A <sup>1</sup>	B <sup>2</sup>	A	A	A	A	A	A	A	A	A <sup>1</sup>	-	-	A	A	A
Alcohol: Octyl	-	A	-	A	C	B	A	A	A	A	-	-	-	A	A	-	-	A	A	A	C	A	-	-	B	B	B	B	B	B	A	-	-	-	B	A	-	-	
Alcohol: Propyl	A <sup>2</sup>	A <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	C	B	A <sup>2</sup>	A	A	A <sup>2</sup>	A	A	A	A	A	A	A	C	A	A	A	-	A	A	A	B <sup>2</sup>	A	A	-	-	-	-	A	A	A	A	
Aluminum Chloride 20%	A <sup>1</sup>	A <sup>1</sup>	A	B <sup>2</sup>	A <sup>1</sup>	B	D	D	A	C	A	A	A	C <sup>1</sup>	D	D	B	C <sup>1</sup>	D	D	D	A	A	-	A	A	A	A	B	A	A	A	B	B	A	A	A	A	
Aluminum Chloride	A <sup>2</sup>	A <sup>1</sup>	A	B <sup>2</sup>	A <sup>1</sup>	-	-	D	A	-	-	A	A	C <sup>1</sup>	A <sup>1</sup>	A <sup>1</sup>	B	B <sup>1</sup>	D	D	A <sup>1</sup>	A	A	-	A	A	A	A	A	B	A	A	B	B	A	A	A	A	
Aluminum Fluoride	A <sup>2</sup>	B <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	-	A <sup>1</sup>	A <sup>1</sup>	C	A	A	A	C <sup>1</sup>	B <sup>1</sup>	D	A	C <sup>1</sup>	-	-	B <sup>1</sup>	B	A	-	A	A	A	A	B	A	A	-	-	B	-	A	-	A	
Aluminum Hydroxide	A	B <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	D	A <sup>1</sup>	A	B	-	A	A	D <sup>1</sup>	A <sup>1</sup>	A <sup>1</sup>	B <sup>1</sup>	A <sup>1</sup>	C	A	B <sup>1</sup>	B	A	A	A	A	A	A <sup>2</sup>	D	A <sup>2</sup>	A	A <sup>1</sup>	-	-	-	A	A	A	
Aluminum Potassium Sulfate 10%	A <sup>2</sup>	A <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	-	D	A <sup>2</sup>	C	-	B <sup>1</sup>	A	A	B <sup>2</sup>	C	B <sup>1</sup>	A	A	-	D	C	C	A	-	A	A	A	A	A	A	A	A	B	A	A	A	A	
Aluminum Potassium Sulfate 100%	A <sup>2</sup>	A <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	-	D	A <sup>2</sup>	C	-	-	A	B <sup>2</sup>	C	D	A	B	-	D	C	C	A	-	A	A	A	A	A	A	A	A	A	B	A	A	A	A	
Aluminum Sulfate	A <sup>2</sup>	A <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	A	A <sup>2</sup>	A	C	A	A	A	B <sup>1</sup>	B	D	A	B	C	D	B <sup>1</sup>	B	A	-	A	A	A	A	A	B	A	A	B	A	A	A	A	A	
Amines	D	A <sup>1</sup>	-	C <sup>1</sup>	D	-	D	D	D	B	-	-	A <sup>2</sup>	A	A	A	B	B	D	D	B	C	A	-	D	D	B	D	B	D	B	A	-	-	B	A	-	-	
Ammonia 10%	A	A <sup>1</sup>	A <sup>2</sup>	C <sup>1</sup>	B <sup>1</sup>	-	A	A	A <sup>1</sup>	D	A <sup>1</sup>	A	A	A <sup>1</sup>	A <sup>1</sup>	A <sup>1</sup>	C	A <sup>1</sup>	D	A	A <sup>1</sup>	A	A	-	D	A	A	A	D	D	A	A	B	-	-	A	A	A	
Ammonia, anhydrous	A	A	A	B <sup>2</sup>	A <sup>2</sup>	-	A	A <sup>1</sup>	B <sup>1</sup>	D	A <sup>1</sup>	A	A	A <sup>1</sup>	A	A	C	A	D	A	A <sup>1</sup>	B	C	-	D	B	C	B	D	D	A	A	A	D	A	A	A	A	
Ammonia, liquid	A	A <sup>1</sup>	A <sup>2</sup>	C <sup>1</sup>	A <sup>2</sup>	-	A	B <sup>1</sup>	-	D	A <sup>1</sup>	A	A	A	B <sup>2</sup>	C	B <sup>2</sup>	A	D	C	A	A	-	D	C	A	C	D	D	A	A	B	-	-	-	A	A	A	
Ammonia, Nitrate	B	A	A	-	B <sup>1</sup>	-	A	D	A	C	A	A	A	A	A	A	-	A	D	A	C	-	-	-	D	C	C	C	-	D	A	-	-	B	-	A	-	-	
Ammonium Bilfluoride	A	A <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	A	-	A	D	-	A	A	-	C	-	-	B	D	D	B	B	-	-	A	A	A	A <sup>2</sup>	-	-	-	-	-	-	-	-	-	-	-
Ammonium Carbonate	A	A <sup>1</sup>	A	B <sup>2</sup>	A <sup>2</sup>	-	D	A	A <sup>2</sup>	D	A	A	A	B	B	B	A	B	D	A	B	B	A	-	-	D	A	B	A	-	-	-	-	-	-	-	-	-	-
Ammonium Casenite	-	A	-	-	-	-	D	-	A	D	-	-	-	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ammonium Chloride	A <sup>2</sup>	A <sup>1</sup>	A <sup>2</sup>	A <sup>2</sup>	A <sup>2</sup>	-	A	C	A	B	A	A	A	D <sup>1</sup>	C	C	B	B	D	D	C	A	A	-	A	B	A	B	A	A	A	B	-	-	-	-	-	-	-
Ammonium Hydroxide	A	A <sup>1</sup>	A	A <sup>1</sup>	A	B	A	A	A	C <sup>1</sup>	A	A	A	A <sup>1</sup>	A <sup>1</sup>	B	A	A	A	A	B <sup>2</sup>	B	A	-	B	D	A	D	D	A	A	B	A	A	A	A	A	A	A
Ammonium Nitrate	A <sup>2</sup>	A <sup>1</sup>	A	A	A <sup>2</sup>	-	D	B	A	C	A	A	A	A	A <sup>1</sup>	A <sup>1</sup>	A	A	D	A	B <sup>1</sup>	B	A	-	A	A	B	A	C	A	A	B	-	-	-	-	-	-	
Ammonium Oxalate	-	A	-	-	-	-	D	-	-	B	-	-	-	A	A	A	-	A	D	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ammonium Persulfate	A	A <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	C	C <sup>1</sup>	A <sup>1</sup>	D	-	A <sup>1</sup>	A <sup>1</sup>	B	A	A	A	B	D	D	D	B	A	-	A	D	A	D	A	A	A	A	-	-	-	-	-	-	-
Ammonium Phosphate, Dibasic	A	A <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	-	A	C <sup>1</sup>	A	B	-	A	A <sup>2</sup>	B	B	B	A	A <sup>1</sup>	C	C	B <sup>1</sup>	B	A	-	A	A	A	A	A	A	A	A	A	-	-	-	-	-	-
Ammonium Phosphate, Monobasic	A	A	A	A	A	-	A	B	A	B	-	-	A	C <sup>1</sup>	B	B	A	C <sup>1</sup>	D	D	B	B	A	-	A	A	A	A	A	A	A	-	-	-	-	-	-	-	-
Ammonium Phosphate, Tribasic	A	A	A	C	A	-	A	B	A	B	-	-	A	B	B	B	A	-	C	A	B	B	A	-	A	A	A	A	A	A	A	-	-	-	-	-	-	-	-
Ammonium Sulfate	A	A <sup>1</sup>	A	A <sup>1</sup>	A <sup>2</sup>	-	A	A <sup>1</sup>	A	-	-	A	A	B	B	B	A	B	D	C	A <sup>1</sup>	B	A	-	A	A	A	A	A	A	A	A	-	-	-	-	-	-	-
Ammonium Thiosulfate	-	A	-	A	-	-	-	A	-	-	B	-	-	A	-	-	-	-	D	D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Amyl Acetate	C <sup>1</sup>	A <sup>1</sup>	B <sup>1</sup>	C <sup>1</sup>	C <sup>1</sup>	-	D	C <sup>2</sup>	D	A	A	A <sup>2</sup>	A	A	A <sup>1</sup>	B	A	A	C	C	A	A	A	-	D	D	D	D	D	A	A <sup>1</sup>	D	D	A	A	A	A	A	A
Amyl Alcohol	A <sup>2</sup>	D	B <sup>1</sup>	B <sup>2</sup>	A <sup>2</sup>	-	A	A <sup>1</sup>	C	A	A	A	A	A	A	-	-	B	A	A	-	B	A	A	-	B	B	A	B	B	A	A	A						

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	CPVC	Epoxy	Polypropylene	Polyethylene	PVC	Cyolac ® (ABS)	Phenolic	Nylon	Noryl ®	Delrin ® (Acetal)	Ryton ® to 200°F	Kynar ® (PVDF)	Teflon ®	Stainless steel (316)	Stainless steel (304)	Stainless steel (440)	Titanium	Carpenter 20	Cast bronze	Cast iron	Aluminum	Hastelloy C	Carbon.ceramic	Caramagnet A	Viton ®	Buna N	Neoprene ®	Nitrile	Natural rubber	Hypalon ®	EPDM	KeI-F®	Tygon	Silicone	Ceramic	Carbon/graphite					
Barium Chloride	A¹	A¹	A	A¹	A¹	-	A	A²	A	A	A	A	A	A¹	A¹	B	A	B	C	C	D	B	A	-	A	A	A	A²	A	A	A	A	B	A	A	A					
Barium Cyanide	D	A¹	D	B	D	-	-	-	B	-	-	-	A¹	A¹	A¹	-	-	A¹	C	-	C¹	-	A	-	A	C	A	C	-	-	-	-	-	-	-	-					
Barium Hydroxide	A¹	A¹	B	B²	A²	-	A	A¹	A²	D	A	A	A	B	B¹	B¹	B	B¹	A	A	D	B	A	A	A	A	A	A²	A	A	A	A	A	A	A	A					
Barium Nitrate	A	A¹	A	B²	A	-	D	A¹	A	A	-	-	A¹	B	B¹	B	A	B	D	A	B	A	-	A	A	A²	A	A²	-	-	-	-	-	-	-	-	-				
Barium Sulfate	B¹	C¹	B¹	B²	B¹	-	-	A¹	A¹	A	A	A	A	B¹	B¹	B	B	B	C	-	B	A	A	-	A	A	A	A	A	A	A	A	A	A	B	A	A				
Barium Sulfide	A²	B¹	B	B²	A²	-	-	A¹	A²	A	-	A	A	B²	B¹	B¹	A	A¹	C	-	D	-	A	-	A	A	A	A	A	A	A	A	A	-	-	-	-	-			
Beer	A¹	A¹	A¹	A²	A¹	-	A	A¹	A¹	B	-	A	A	A	A¹	A¹	B	A	A	D	A	A¹	A	-	A	A	A	A	A	A	A	A	A	A	C	A	A	A			
Beer Sugar Liquids	A²	A¹	B¹	A¹	A²	B	A	A	A	B	-	-	A¹	A	A¹	B	A	A	C	A	A	-	A	-	A	A	A	A	A	A	A	A	A	A	A	A	A	A			
Benzaldehyde	D	A¹	A¹	A¹	D	B	D	C¹	D	A	A	A²	A¹	B	B	-	A	A	A	A	B	A	A	-	A	A	D	D	D	D	D	D	A	A	D	D	A	A			
Benzene	C¹	C¹	C¹	C¹	C¹	D	A	A	D	A¹	A	A²	A	B	B	B	A	A	A	A	B	B	A	A	A	A	D	D	D	D	D	D	D	B	C	D	A	-			
Benzoic Acid	A	A¹	C¹	B²	A	-	C	C¹	A¹	B	A	A	A²	B	B	B	B	B	D	D	B	B¹	A	-	A	D	D	D	D	D	D	D	D	A	B	B	B	D			
Benzol	-	A¹	A	C¹	-	-	A	D	D	A	A	A	A	A	A¹	-	-	B	A	A	B¹	B	A	A	A	D	B	D	D	D	B	B	A	-	-	-	A	A			
Borax (Sodium Borate)	A	A¹	B	A²	B¹	-	D	A	A¹	A	A	A	A	A	A	A	B	A	A	A	B¹	B	A	A	A	D	D	D	D	A	A	A	A	A	A	B	A	A			
Boric Acid	A	A¹	A	A²	A²	-	A	B	A¹	A	A	A	A	A	A¹	B²	B	A	B²	B	D	D	A	A	A	A	A	A	A	A	A	A	A	A	B	A	B	A	A		
Brewery Slop	-	A	-	-	-	-	A	-	-	A	-	-	-	A	-	-	-	A	A	A	-	-	A	-	A	A	A	A	-	-	-	-	-	-	-	-	-	A	-		
Bromine	D	D	D	D	C¹	D	D	D	A¹	D	D	A	A	D	D	D	D	D	C	-	D	A	D	D	D	D	D	D	D	D	D	D	D	A	B	D	A	D			
Butadiene	A	A¹	D	D	C¹	-	A	A¹	-	A¹	A	A	A²	A	A	A	-	A	C	-	A	A	-	A	-	B	D	D	D	D	D	B	C	A	-	-	D	A	A		
Butane	C¹	A¹	C¹	C¹	C¹	B	A²	D	A	A	A	A	A	A²	A²	A	A	A	C	-	A	A	A	-	A	A	A	A	D	B	D	A	C	D	A	A	A				
Butanol (Butyl Alcohol)	A	D	A¹	A²	B¹	-	A	B¹	A	A	A	A	A²	A¹	A	A	B	A	A	-	B	A	A	-	A	A	A	A	A	A	A	A	B	A¹	B	B	A	A			
Butter	-	A	-	-	-	B	D	-	B	A	-	-	-	A	A	C	-	-	D	D	A	A	-	-	A	A	B	A	D	B	A	-	-	B	B	A	A				
Buttermilk	A¹	A¹	A¹	A¹	A¹	B	D	B¹	A	A	-	-	A	A	A	A	-	-	D	D	A	A	A	-	A	A	A	A	D	-	-	A	B	-	-	A	A	A			
Butylene	A¹	A¹	-	B¹	C¹	-	A	B¹	-	A	A	A	A	A	A	A	-	A	D	-	A	-	A	-	A	B	C	B	D	D	D	D	B¹	D	A	A	A				
Butylacetate	C¹	B¹	B¹	C¹	D	-	D	A	D	A	A	B²	A	A	B	B	A	B¹	A	A	B	A	A	-	A	D	D	D	D	D	D	B	A¹	D	D	A	A	A			
Butyric Acid	A	C¹	C¹	D	B¹	D	D	B¹	A¹	C	A	B	A²	B²	B²	C²	A	B	A	D	B	A¹	A	B	B¹	D	D	D	D	-	D	B	A	C	-	-	-	-			
Calcium Bisulfate	-	A¹	-	-	-	-	D	-	-	-	-	-	-	A	-	-	-	-	C	D	-	-	-	-	-	-	A	-	-	-	-	-	-	-	-	-	A	A			
Calcium Bisulfide	A¹	A	A	-	A²	-	-	A	A	D	-	-	A	B	B	-	A	B	C	-	C	-	A	-	A	A¹	A	A¹	-	-	-	C	A	-	-	-	-	A	A		
Calcium Bisulfite	B¹	A	B	A¹	B¹	-	-	A²	A¹	D	A	A	A	A	B	D	A	B¹	A	-	D	B	-	-	A	A¹	A	A	D	A	D	A	-	-	-	-	-	A	A		
Calcium Carbonate	A	A¹	A	B²	A²	-	-	A	A²	A	-	A	A	B	A¹	A	B	B¹	A	-	D	B	A	-	A	A¹	A	A	A	A	A	A	A	-	-	-	-	-	A	A	
Calcium Chlorate	A	-	-	-	A²	-	A	-	-	-	-	-	A	-	-	-	-	-	-	-	-	-	-	-	A	C	-	C	-	-	-	-	-	-	-	-	-	-			
Calcium Chloride	A²	A¹	A²	B²	A²	B	A	A¹	A	D	A	A	A	B²	C²	C¹	A	B	A	C	D	A	A	B	A	A	A	A	A	A	A	A	A	A	-	-	-	-	A	A	
Calcium Hydroxide	A²	A¹	A²	B²	A²	-	D	A²	A²	D	A	A	A	B	C	C	A	B	D	A	C¹	A	A	A	A	A	A	A	A	A	A	A	A	-	-	-	-	-	-	A	A
Calcium Hypochlorite	B¹	A¹	A²	B²	B¹	-	A	C¹	A	D	A	A	A	B	C¹	D	A¹	B	D	D	D	B	A	-	A	C¹	C	C¹	D	A	B¹	B¹	A	B	A	A	A	A	A		
Calcium Sulfate	A²	A¹	A²	B²	A²	C	D	D	A	D	A	A	A	B	B	B	A	B	A	A	C	B	A	-	A	A²	C	A²	-	-	-	-	-	-	-	-	-	-	-	A	A
Calgon	-	A	A	-	-	-	D	A	A	B	-	-	-	A	A	-	-	-	C	D	-	-	-	-	A	A	A	A	-	-	-	-	-	-	-	-	-	-	-	-	
Cane Juice	A²	A	C¹	-	A²	-	A	A	-	A	-	-	A	A	A	-	-	A	A	A	B	-	A	-	A	A	A	A	A	A	A	A	A	A	A	A	A	A	-	-	
Carbolic Acid (See Phenol)	A	C¹	B²	B¹	C	-	D	D	D	D	A	A²	A	B	B	B	A	B	A	D	B	A	A	A	A	D	C	D	D	D	C	B	A¹	C	D	D	A	A			
Carbon Bisulfide	A	A	C¹	-	D	-	-	A	-	A	-	-	-	B	A	A	-	B	B	-	B	-	A	A	A	C	D	C	-	D	D	-	-	-	-	-	-	-	-	-	
Carbon Dioxide	A	A¹	A²	C¹	A	B	A	A¹	A¹	A	A	A	A	A¹	A	A	A	A	A	A	D	B	A	A	-	B	A	B	A	B	B	B	A	-	-	-	-	-	-	-	-
Carbon Dioxide (Dry)	A	A¹	A²	C¹	A	B	A	A²	A¹	A	A	A	A	A¹	A	A	A	A	A	A	D	B	A	A	-	B	A	B	A	B	B	A	-	-	-	-	-	-	-	-	
Carbon Dioxide (Wet)	A	A¹	A²	C¹	A	B	A	A²	A¹	A	A	A	A	A¹	A	A	A	A	A	A	D	B	A	A	-	B	A	B	A	B	B	A	-	-	-	-	-	-	-	-	
Carbon Disulfide	C¹	C¹	D	C¹	D	-	A	B¹	A¹	A¹	A	B²	A	B	A¹	B	B	B	D	A	A	B	A	-	A¹	D	D	D	D	D	D	A	-	-	-	-	-	-	-	-	
Carbon Monoxide	A²	A¹	A	B²	A²	-	A	A	A²	A	-	B	A	A	A	A	-	A	A	C	D	A	A	-	A	A	A	A	B	A	A	A	A	-	-	-	-	-	-	-	-
Carbon Tetrachloride	C¹	A¹	B¹	B¹	B¹	D	A	D	D	B¹	A	A	A	B	B	B	A	B	A	C	D	A¹	A	A	A	C	D	C	D	D	D	D	A¹	C	D	A	A	A	A		
Carbonated Water	A	A	B	A	A	-	-	A	A	A	-	-	-	A	A	A	-	A	A	C	D	A	-	-	A	A	A	A	-	-	-	-	-	-	-	-	-	-	-	-	
Carbonic Acid	A	B¹	B	B²	A²	-	A	A¹	A¹	B¹	A	A¹	A	A	A¹	B	B¹	A	A	D	B¹	A¹	A	-	A	B	A	B	A	A	A	A	A	-	-	-	-	-	-	-	-
Catsup	A	A¹	A	-	A	B	D	A	A	B	-	-	-	A	A	A	-	A	D	D	D	-	A	-	A	A	C	A	-	-	-	-	-	-	-	-	-	-	-	-	
Chloroacetic Acid	B¹	C¹	C¹	C¹	B¹	-	-	D	-	D	A	A¹	A	A¹	B¹	D	A¹	C²	-	-	D	B	A	-	D	B	D	B	D	-	-	-	-	-	-	-	-	-	-	-	
Chloric Acid	A	-	-	-	A²	-	-	D	D	D	-	-	-	A	C	D	D	-	A	-	D	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorinated Glue	-	A	-	-	-	-	D	-	-	-	-	-	-	A	-	-	-	-	A	D	-	-	-	-	A	C	D	C	-	-	-	-	-	-	-	-	-	-	-	-	
Chlorine, anhydrous liquid	B²	C¹	B	B²	C¹	-	D	D	B¹	A¹	D	B	A	C	C¹	D	B	C	D	C	D	B	A	-	A	D	D	D	D	C	C	B²	C	-	-	-	-	-	-	-	-
Chlorine, dry	A²	-	C¹	B	A²	-	-	D	B¹	D	D	A	A	B	C¹	C	D	A	-	-	-	C¹	B	-	-	A	D	C	D	D	B	A	D	-	-	-	-	-	-	-	-
Chlorine Water	A²	A¹	C¹	B¹	A²	-	-	C¹	C¹	D	D	B	A	A	C	C	D	A	B	-	D	A	-	-	A	D	D	D	D	C	C	A	-	-	-	-	-	-	-	-	-
Chlorobenzene (Mono)	D	C¹	C¹	C¹	D	D	D	B	D	A¹	A	A	B	B	A	B	B	B	A	D	A	B	A	-	A	D	D	D	D	D	D	A¹	A	D	A	A	A	A	A	A	
Chloroform	D	C¹	C¹	C¹	D	D	A	D	D	B¹	A	A	A¹	A	B¹	A	A²	A	D	D	B¹	A¹	A	A	A	D	D	D	D	D	D	B¹	A	D	A	A	A	A	A		





# MATERIAL COMPATIBILITY

**Ratings-chemical effect**

- A - No effect - Excellent
- B - Minor effect - Good
- C - Moderate effect - Fair
- D - Sever effect - Not recommended

**Explanation of footnotes**

1. Satisfactory to 72°F
2. Satisfactory to 120°F
3. Satisfactory for O-rings

	CPVC	Epoxy	Polypropylene	Polyethylene	PVC	Cyolac ® (ABS)	Phenolic	Nylon	Noryl ®	Delrin ® (Acetal)	Ryton ® to 200°F	Kynar ® (PVDF)	Teflon ®	Stainless steel (316)	Stainless steel (304)	Stainless steel (440)	Titanium	Carpenter 20	Cast bronze	Cast iron	Aluminum	Hastelloy C	Carbon,ceramic	Caramagnet A	Viton ®	Buna N	Neoprene ®	Nitrile	Natural rubber	Hypalon ®	EPDM	KeI-F®	Tygon	Silicone	Ceramic	Carbon/graphite					
Maleic Anhydride	-	A	D	-	-	-	-	-	D	-	A	-	-	-	A	-	-	-	-	-	A	-	A	A	A	D	D	D	D	D	D	D	D	-	-	-	A	-			
Malic Acid	-	-	A <sup>1</sup>	B <sup>2</sup>	A <sup>2</sup>	-	-	C <sup>1</sup>	-	A	-	A	A	A <sup>2</sup>	A	B <sup>1</sup>	A	B <sup>2</sup>	-	-	A	-	B	-	A	A	D	D	A	B	D	D	D	D	D	-	D	B	-	A	
Mash	-	A	-	-	-	-	-	A	-	A	-	-	-	-	A	-	-	-	-	-	A	-	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	-	A	-	A
Mayonnaise	-	A	-	B	D	-	-	A	-	-	-	-	A	D	A	C	A	-	-	-	D	D	A	A	A	A	A	C	A	C	D	-	-	-	-	D	-	A	-	A	
Melamine	A <sup>2</sup>	A	A	-	A <sup>2</sup>	-	D	A	-	-	-	-	A	D	-	-	-	-	-	D	D	-	-	A	A	A	C	D	C	-	-	A	-	D	-	A	D	D			
Mercuric Chloride (dilute)	A	A	A	A <sup>2</sup>	A <sup>2</sup>	-	A	D	A <sup>2</sup>	B	A	A	A	C	D	D	A <sup>1</sup>	D	-	D	D	D	C	A	A	A	A	A	A	A	A	A	A	A	D	-	A	D	-	A	C
Mercuric Cyanide	A	A	A	A <sup>2</sup>	B <sup>2</sup>	-	-	A	A <sup>2</sup>	-	-	-	A	C	B	B	D	A	A	D	-	D	-	A	A	A	A	A	A	D	-	-	A	D	-	A	A	A	A		
Mercury	A	A	B	A <sup>2</sup>	B	B	D	A <sup>2</sup>	A <sup>1</sup>	A	-	A	A	A	A	A	A	A	A	D	A	-	A <sup>2</sup>	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	
Methanol (Methyl Alcohol)	A	B <sup>1</sup>	A	A <sup>1</sup>	A <sup>1</sup>	B	A	C <sup>1</sup>	A <sup>1</sup>	A	A	A	A	A	A	B <sup>2</sup>	B	A	A	A	A	A <sup>1</sup>	A	A	A	A	A	A	A	A	A	A	A	A	A	A <sup>2</sup>	A	A	A	A	
Methyl Acetate	-	D	D	B <sup>1</sup>	D	-	-	A <sup>2</sup>	-	B	-	D	-	A	A	A	-	-	-	A	-	A	A	A	A	D	D	B	D	D	D	D	D	B	A	A	D	A	A		
Methyl Acetone	-	A	D	-	-	-	-	-	-	B	-	D	-	-	-	-	-	-	-	-	-	-	-	A	A	D	D	B	D	D	D	D	D	B	-	-	D	A	-		
Methyl Acrylate	-	C	-	-	-	-	-	A	-	D	-	D	-	A	A	A	-	-	A	B	-	A	-	-	A	A	D	D	D	A	-	-	-	A	-	-	-	A	-		
Methyl Alcohol 10%	A <sup>1</sup>	B <sup>1</sup>	A <sup>2</sup>	A <sup>1</sup>	A <sup>1</sup>	-	A	C <sup>1</sup>	A <sup>1</sup>	A	A	A	A	A	A	B <sup>1</sup>	B	A	-	A	A	A <sup>1</sup>	A	-	-	D	A	A	A	A	A	A	A	A <sup>2</sup>	A	-	-	-	A	-	
Methyl Bromide	D	B <sup>1</sup>	C	-	D	D	-	C	-	D	-	A	-	A	A	A	B	-	-	-	-	-	-	A	A	A	B	D	B	D	D	D	D	D	-	-	A	A	A		
Methyl Butyl Ketone	-	C	D	-	A	-	-	D	-	D	-	D	-	A	-	B	-	-	-	A	-	-	-	A	A	D	D	D	D	D	D	D	A	-	D	A	A	-	A		
Methyl Cellosolve	-	C	B <sup>1</sup>	-	B <sup>2</sup>	-	-	C	-	D	-	A	-	A	A	C	-	A	-	-	A	-	-	A	A	D	C	B	C	D	D	D	B	-	D	A	A	A	A		
Methyl Chloride	-	A	D1	C <sup>1</sup>	D	-	-	C	D	D	A <sup>1</sup>	A	-	A	A	C	A	B <sup>2</sup>	C	A	D	B	A	A	A	A	D	D	D	D	D	D	D	C	A <sup>1</sup>	D	A	A	A		
Methyl Dichloride	-	A	D	-	A	-	-	C	-	D	-	A	-	-	-	A	-	-	-	-	-	-	-	A	A	A	D	-	D	-	-	-	D	-	-	-	A	-	A		
Methyl Ethyl Ketone	D	C <sup>1</sup>	A <sup>1</sup>	B <sup>2</sup>	D	D	A	A <sup>1</sup>	D	B	A	C <sup>2</sup>	A	A	A	B	A	A	A	A	A	A <sup>2</sup>	A	A	A	D	D	D	D	D	D	A	A <sup>1</sup>	D	D	A	A	A	A		
Methyl Isobutyl Ketone	-	C	C <sup>1</sup>	B <sup>1</sup>	D	-	-	A	A <sup>1</sup>	D	D	A	A <sup>1</sup>	A	A <sup>2</sup>	A	B	A	A	C <sup>1</sup>	A	A <sup>2</sup>	A	A	A	D	D	D	D	D	D	C	A	-	D	A	A	A			
Methyl Isopropyl Ketone	-	C	D	-	-	-	A	-	-	D	-	D	-	A	-	B	-	A	-	-	-	-	-	A	A	D	D	D	D	D	D	B	-	-	D	A	-	A			
Methyl Methacrylate	-	A	D	-	-	-	-	-	-	D	-	D	-	-	-	A	-	-	-	-	-	-	-	A	A	D	D	D	D	D	D	D	D	-	-	C	A	-	A		
Methylamine	-	A	-	-	A	-	-	-	-	-	-	-	-	A	A	-	A	-	D	-	-	-	-	A	A	D	C <sup>1</sup>	-	C <sup>1</sup>	B	-	A <sup>1</sup>	-	D	-	-	-	A	-		
Methylene Chloride	D	A	B <sup>1</sup>	C <sup>1</sup>	D	D	A	C <sup>1</sup>	D	A <sup>1</sup>	A <sup>1</sup>	B <sup>2</sup>	A	B	B	B	B	B	A	A	A <sup>1</sup>	B	A	A	A	B	D	-	D	B	-	D	A	D	-	-	A	A	A		
Milk	A	A	B	A <sup>2</sup>	A <sup>2</sup>	B	A	A <sup>2</sup>	A <sup>2</sup>	A	-	A	A	A <sup>2</sup>	A <sup>2</sup>	B	A	A	C	D	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A		
Molasses	A	A	A	A	A <sup>2</sup>	B	A	A <sup>1</sup>	A <sup>2</sup>	A	-	B <sup>2</sup>	A	A	A	B	A	A	D	A	A	A	A	A	A	A	A	A	A	A	-	-	A	B	-	-	A	A	A		
Mustard	A	A	A	A	B	-	D	A <sup>1</sup>	A	C	-	A	-	A	A	A	C	A	A	D	D	B	A	A	A	D	C	A	C	B	-	-	-	B	-	-	-	A	A		
Naphtha	A	A	C	A	C	D	A	A <sup>1</sup>	D	D	A	A	-	A	A	A	B	A	B	A	A	B	A	A	A	A	C	D	C	D	D	D	A	C	D	A	A	A	A		
Naphthalene	D	A	B <sup>2</sup>	A	D	D	A	A <sup>1</sup>	D	D	A	A	-	A	A	A	A	A	C	A	B <sup>1</sup>	A	A	A	A	A	D	D	D	D	D	D	A	C	D	A	A	A	A		
Nickel Chloride	A	A	A	B <sup>2</sup>	A <sup>2</sup>	B	A	C <sup>1</sup>	A <sup>1</sup>	A	A	A	A	C	D	D	A	B <sup>1</sup>	D	D	D	B	A	A	A	A	A	B	A	A	A	A	A	A	B	A	A	A	A		
Nickel Sulfate	A	A	A	B <sup>2</sup>	A <sup>2</sup>	B	C	A <sup>1</sup>	A <sup>1</sup>	A	A	A	A	A	B <sup>1</sup>	B	B	B	C	D	D	B	A	A	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A		
Nitrating Acid (<15% H2SO4)	-	-	C	-	D	-	-	A	-	-	-	C	-	A	C	C	-	A	-	D	A	D	A	D	A	-	-	A	-	C	-	-	-	D	-	-	-	A	-		
Nitrating Acid (>15% H2SO4)	-	-	D	C	-	D	-	-	-	-	-	D	-	A	C	C	D	C	-	D	C	D	A	D	A	-	-	A	-	C	-	-	-	D	-	-	-	A	-		
Nitrating Acid (<1% Acid)	-	-	C	-	D	-	-	-	-	-	-	C	-	A	A	C	-	-	-	D	-	D	A	D	A	-	-	A	-	C	-	-	-	D	-	-	-	A	-		
Nitrating Acid (>15% HNO3)	-	-	C	-	D	-	-	-	-	-	-	C	-	A	D	C	-	C	-	D	C	D	A	D	A	-	-	A	-	C	-	-	-	D	-	-	-	A	-		
Nitric Acid (5-10%)	A	A <sup>1</sup>	A <sup>2</sup>	B <sup>2</sup>	A <sup>1</sup>	B	D	C <sup>1</sup>	A	D	A <sup>1</sup>	A	A	A	A	B	A <sup>1</sup>	A <sup>1</sup>	D	D	D	A <sup>1</sup>	D	B	A	A	D	B	D	D	B	B	A <sup>1</sup>	D	C	C	A	A			
Nitric Acid (20%)	A <sup>2</sup>	B <sup>1</sup>	A <sup>2</sup>	C <sup>1</sup>	A <sup>1</sup>	B	D	D	B <sup>2</sup>	D	A <sup>1</sup>	A	A	A	A	B	A <sup>1</sup>	A <sup>1</sup>	D	D	D	A <sup>1</sup>	D	C	A	A	D	D	D	D	D	B	A <sup>1</sup>	D	D	D	A	A			
Nitric Acid (50%)	A <sup>1</sup>	D	D	C <sup>1</sup>	B <sup>1</sup>	C	D	D	D	B <sup>2</sup>	B	A	A	A <sup>1</sup>	A	B	A <sup>1</sup>	A <sup>1</sup>	D	D	D	C	A <sup>1</sup>	D	A	A	D	D	D	D	D	D	A	D	D	D	D	D	D		
Nitric Acid (Concentrated)	D	D	D	C <sup>1</sup>	D	D	D	D	B <sup>1</sup>	D	B <sup>1</sup>	A	A	A <sup>1</sup>	A	C	A <sup>1</sup>	A <sup>2</sup>	D	D	D	A <sup>2</sup>	B <sup>1</sup>	D	A	A	D	D	D	D	D	A <sup>1</sup>	D	D	D	D	D	D			
Nitrous Acid	A	-	A	-	A	-	-	-	-	D	-	-	-	A	A	A	-	-	-	A	-	-	-	-	A	-	D	-	C	-	-	-	-	-	-	-	-	-	A		
Nitrobenzene	D	C <sup>1</sup>	B <sup>1</sup>	C <sup>1</sup>	D	D	D	B <sup>1</sup>	D	B	A	A <sup>1</sup>	A	A	B	B	A	A	C	C	A <sup>1</sup>	D	A	-	B	D	D	D	D	D	D	D	A <sup>1</sup>	D	D	A	B	A	B		
Oils: Aniline	-	A	A	-	D	D	D	A	D	D	-	A	-	A	A	A	D	A	A	A	D	B	A	A	A	C	D	D	D	D	D	B	-	D	D	A	-	-	A		
Oils: Arinse	-	A	-	-	-	-	-	A	-	-	D	-	-	-	A	-	A	-	A	-	-	-	-	A	A	-	D	-	-	-	-	-	-	-	-	-	-	-	-	A	
Oils: Bay	-	A	-	-	-	-	-	A	-	-	D	-	A	-	A	-	A	-	A	-	-	-	-	A	A	A	D	-	-	-	-	-	-	-	-	-	-	-	-	-	A
Oils: Bone	-	A	A	-	-	-	-	-	-	-	D	-	A	-	A	-	A	-	A	-	-	-	-	-	A	A	D	A	-	-	-	-	-	-	-	-	-	-	-	-	A
Oils: Castor	A	A	A	-	A	-	A	A	-	A	-	A	-	A	A	A	A	-	A	A	-	-	-	-	A	A	A	A	A	A	A	B	-	A	A	A	-	-	-	A	
Oils: Cinnamon	-	A	-	-	-	-	-	A	-	-	D	-	-	-	A	A	A	-	-	-	-	-	-	-	A	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	A
Oils: Citric	-	A	-	-	-	-	-	A	-	-	D	-	A	D	A	-	A	-	D	D	A	A	A	A	A	A	D	-	-	-	-	-	-	D	-	-	-	-	-	-	A
Oils: Clove	-	A	-	-	-	-	-	A	-	-	-	-	-	-	A	A	A	-	-	-	-	-	-	-	A	-	B	A	A	A	A	C	A	-	-	-	-	-	-	-	A
Oils: Cocoa Nut	A <sup>1</sup>	A	A <sup>1</sup>	-	A <sup>1</sup>	-	-	A	-	-	A	-	A	A	A	A	-	-	-	A	A	A	A	A	A	A	A	C	A	D	C	C	-	A	A	A	-	-	-	A	
Oils: Cod Liver	A <sup>1</sup>	A	A <sup>1</sup>	-	A <sup>1</sup>	-	-	A	-	-	B	-	A	A	A	A	-	-	-	A	-	-	-	-	A																

# MATERIAL COMPATIBILITY

**Ratings-chemical effect**

- A - No effect - Excellent
- B - Minor effect - Good
- C - Moderate effect - Fair
- D - Sever effect - Not recommended

**Explanation of footnotes**

1. Satisfactory to 72°F
2. Satisfactory to 120°F
3. Satisfactory for O-rings

	CPVC	Epoxy	Polypropylene	Polyethylene	PVC	Cyolac ® (ABS)	Phenolic	Nylon	Noryl ®	Delrin ® (Acetal)	Ryton ® to 200°F	Kynar ® (PVDF)	Teflon ®	Stainless steel (316)	Stainless steel (304)	Stainless steel (440)	Titanium	Carpenter 20	Cast bronze	Cast iron	Aluminum	Hastelloy C	Carbon,ceramic	Caramagnet A	Viton ®	Buna N	Neoprene ®	Nitrile	Natural rubber	Hypalon ®	EPDM	Kel-F®	Tygon	Silicone	Ceramic	Carbon/graphite
Oils: Mineral	A	A	B <sup>1</sup>	B <sup>1</sup>	A <sup>1</sup>	-	A	A	A <sup>1</sup>	A	A	A	A	A	A	A	A	A	A	-	A	A	A	A	A	A	B	A	D	B	D	A	A	C	A	A
Oils: Olive	A	A	A	A <sup>1</sup>	C	-	A	A <sup>1</sup>	A <sup>2</sup>	-	-	-	A <sup>1</sup>	A	A	-	A	A	A	-	A	A	A	A	A	A	B	A	D	B	B	-	B	D	A	A
Oils: Orange	-	A	-	-	-	-	A	-	-	D	-	A	-	A	A	A	A	A	A	-	A	A	A	A	A	A	C	A	-	-	-	-	-	D	A	-
Oils: Palm	A	A	-	-	A	-	A	-	-	D	-	A	-	A	A	A	A	A	A	A	-	-	A	A	A	A	D	A	-	-	-	-	-	-	A	-
Oils: Peanut	A <sup>1</sup>	A	D	-	A <sup>1</sup>	-	A	-	-	D	-	A	A	A	A	A	A	A	A	A	D	-	A	A	A	A	B	A	D	B	C	-	A	A	A	-
Oils: Peppermint	-	A	-	-	-	-	A	-	-	D	-	A	-	A	A	A	-	A	A	-	D	-	A	A	A	D	D	B	-	-	-	-	-	-	A	-
Oils: Pine	A	A	D	-	C	-	C	A	-	D	-	A	A	A	A	A	A	A	D	C	-	-	A	A	A	B	D	D	D	D	D	-	C	D	A	-
Oils: Rapeseed	A	A	D	-	-	-	A	-	-	D	-	A	-	A	A	A	A	A	A	A	-	-	A	A	A	B	B	B	D	D	A	-	-	D	A	-
Oils: Rosin	-	A	A <sup>2</sup>	B <sup>2</sup>	C <sup>1</sup>	-	A	A <sup>1</sup>	-	-	-	A	A	A	A <sup>1</sup>	B <sup>2</sup>	-	B <sup>1</sup>	A	-	B <sup>1</sup>	A	A	A	A	A	-	A	-	-	-	-	-	-	A	A
Oils: Sesame Seed	A	A	-	-	A	-	A	-	-	D	-	A	A	A	A	A	A	A	A	A	-	-	A	A	A	A	D	A	-	-	-	-	-	A	-	A
Oils: Silicone	A	A	A	A	A	-	A	A <sup>1</sup>	A <sup>1</sup>	A	A <sup>1</sup>	A	A	A	B	A	-	A	A	A	A	A	A	A	A	A	A	A	A	A	A	-	A	C	A	A
Oils: Soybean	A <sup>2</sup>	A	A <sup>1</sup>	A <sup>1</sup>	A <sup>1</sup>	-	D	B <sup>1</sup>	-	D	-	A	A	A	A	A	A	A	A	A	B	A	A	A	A	D	C	D	D	C	C	-	B	A	A	A
Oils: Sperm	A	A	-	-	-	-	A	-	-	D	-	A	-	A	A	A	A	A	A	A	-	-	A	A	A	A	D	A	-	-	-	-	-	A	-	A
Oils: Tanning	-	A	-	-	-	-	A	-	-	D	-	A	-	A	A	A	-	A	A	-	-	-	A	A	A	A	D	A	-	-	-	-	-	-	A	-
Oils: Turbine	A	A	B <sup>1</sup>	A <sup>1</sup>	A <sup>1</sup>	-	A	-	-	D	-	A	A	A	A	A	A	A	A	A	-	-	A	A	A	B	D	B	D	D	D	-	A	D	A	-
Oleic Acid	C <sup>1</sup>	A	B <sup>1</sup>	B <sup>1</sup>	C <sup>2</sup>	D	C	B <sup>2</sup>	A <sup>1</sup>	C <sup>1</sup>	A	A	A	B	B <sup>1</sup>	B <sup>1</sup>	B	B <sup>1</sup>	C	-	B	A <sup>2</sup>	A	A	B	C	C	C	C	C	B	A	B	D	A	A
Oleum 25%	D	D	D	D	D	-	-	D	-	D	-	D	A	B	B <sup>2</sup>	A <sup>2</sup>	D	B	D	-	B	B	-	A	A	D	D	D	D	D	D	A	-	D	-	D
Oleum 100%	D	D	D	D	D	-	C	D	A <sup>1</sup>	D	A <sup>1</sup>	C <sup>1</sup>	A	B	B <sup>2</sup>	A <sup>2</sup>	D	B	D	-	B	B	-	A	A	D	D	D	D	D	D	A	C	D	-	D
Oxalic Acid (cold)	A <sup>1</sup>	A	A <sup>2</sup>	A <sup>2</sup>	A <sup>1</sup>	A	C	B <sup>2</sup>	A <sup>1</sup>	C <sup>1</sup>	A	A <sup>2</sup>	A <sup>1</sup>	B <sup>1</sup>	B	B	D	B <sup>2</sup>	A	C	B <sup>1</sup>	B	A	A	A	B	B	B	B	B	A	A	B	B	A	A
Paraffin	A <sup>1</sup>	A	A <sup>1</sup>	A <sup>1</sup>	A	-	A	-	A	A	-	A	A	A	A	A	A	A	A	-	A	A	A	A	B	A	A	A	B	-	D	-	A	-	A	A
Pentane	-	A	D	D	A	-	-	A <sup>1</sup>	-	B	-	A	A	C	C	A	-	C	C	-	A	B	A	A	A	A	B	A	D	B	D	-	A	D	A	A
Perchloroethylene	C <sup>1</sup>	D	D	D	C <sup>1</sup>	-	-	C <sup>1</sup>	D	A	A	A	A	A <sup>1</sup>	B <sup>2</sup>	A	A	B	D	A	B	B	A	A	A	C	D	C	D	D	D	A	C	D	A	A
Petrolatum	-	A	D	B	B	-	-	D	-	B	-	A	C	A	-	-	A	A	A	-	-	A	A	A	A	A	A	C	-	-	A	-	B	-	A	-
Phenol (10%)	A <sup>1</sup>	C	B	A <sup>2</sup>	C <sup>1</sup>	-	D	D	D	D	A	A	A	B	B	B	A	B	C	D	B	A	-	-	A	D	D	D	D	D	B	B	C	D	-	A
Phenol (Carbolic Acid)	A <sup>1</sup>	C	B	B <sup>1</sup>	C <sup>1</sup>	D	D	C	D	D	A	A	A	B	B	B	A	B	C	D	B	A	A	D	A	D	D	D	D	D	B	B	B	D	A	A
Phosphoric Acid (<40%)	A	A	A <sup>1</sup>	A <sup>1</sup>	B <sup>2</sup>	B	D	D	A	C <sup>1</sup>	A	A	A	B	A	A <sup>2</sup>	B	B	D	D	C	A <sup>2</sup>	B	C	A	D	B	D	D	B	B	A	D	D	B	A
Phosphoric Acid (>40%)	A	B <sup>1</sup>	B <sup>2</sup>	B <sup>1</sup>	B <sup>2</sup>	C	D	B <sup>1</sup>	A	D	A	A <sup>1</sup>	A	B	A <sup>2</sup>	B <sup>2</sup>	C	B	D	D	B	A <sup>2</sup>	B	D	A	D	D	D	C	B	B	A	D	C	B	A
Phosphoric Acid (crude)	-	B <sup>1</sup>	B <sup>2</sup>	B <sup>1</sup>	B <sup>2</sup>	C	D	B <sup>1</sup>	A	D	A	A	A	B	D	D	C	B	D	D	B	A <sup>2</sup>	C	D	A	D	D	D	D	C	B	A	D	C	C	A
Phosphoric Acid Anhydride	-	-	A	-	-	-	D	-	-	D	D	D	-	-	-	-	D	-	A	-	-	-	A	-	-	-	A	-	-	-	-	-	-	-	A	-
Phosphoric Acid (molten)	-	-	D	-	D	D	D	-	-	D	-	D	-	-	-	A	D	-	A	-	-	A	-	-	-	-	A	-	-	-	-	-	D	-	-	-
Photographic Developer	A	A	A	A	A	B	A	-	A	A	-	-	A	A	C	C	A	A	D	D	-	-	A	A	A	A	A	A	A	A	B	-	-	A	A	A
Phthalic Anhydride	D	-	D	-	D	-	-	-	-	-	-	A	A	A	A	A	-	A	B	-	A	A	-	-	A	B	A	B	C	-	A	-	B	-	-	A
Picric Acid	D	A	B <sup>1</sup>	-	D	A	D	C <sup>1</sup>	-	A	A	A <sup>1</sup>	A	B	B	B	A	B	D	A	A <sup>1</sup>	B	-	-	A	B	B	B	B	B	B	A	D	D	-	A
Plating Solutions																																				
Antimony Plating 130°F	A	B	A	-	A	-	A	D	A	A	-	A	A	A	A	B	A	A	A	A	A	A	-	A	A	A	A	A	-	-	-	-	-	-	A	-
Arsenic Plating 110°F	A	B	A	-	A	-	A	A	-	A	-	A	A	A	A	B	A	A	A	A	A	A	-	C	A	A	A	A	-	-	-	-	-	-	C	-
Brass Plating																																				
Regular Brass Bath 100°F	A	B	A	B	A	-	A	A	A	A	-	B	A	A	A	A	B	A	A	A	A	A	-	C	A	A	A	A	-	-	-	-	-	-	C	A
High Speed Brass Bath 110°F	A	B	A	B	A	-	A	A	A	A	-	B	A	A	-	B	A	-	A	A	A	A	-	D	A	A	A	A	-	-	-	-	-	-	D	A
Bronze Plating																																				
Cu-Cd Bronze Bath R.T.	A	B	A	-	A	-	A	A	A	A	-	A	A	A	A	B	A	-	A	A	A	A	-	C	A	A	A	A	-	-	A	-	-	-	C	-
Cu-Sn Bronze Bath 160°F	D	C	A	-	D	-	A	A	A	B	-	A	A	A	A	C	D	-	A	A	A	A	-	D	A	A	A	A	-	-	A	-	-	-	D	-
Cu-Zn Bronze Bath 100°F	A	B	A	-	A	-	A	A	A	A	-	A	A	A	A	B	A	-	A	A	A	A	-	C	A	A	A	A	-	-	-	-	-	-	C	-
Cadmium Plating																																				
Cyanide Bath 90°F	A	B	A	-	A	-	-	A	A	A	-	A	A	A	-	B	A	-	A	A	A	A	-	C	A	A	A	A	-	-	-	-	-	-	C	-
Fluoroborate Bath 100°F	A	B	A	-	A	-	A	D	A	C <sup>1</sup>	-	A	A	A	A	B	D	-	A	D	A	D	-	D	A	B	C	B	-	-	-	-	-	-	D	-
Chromium Plating																																				
Chromic-Sulfuric Bath 130°F	A	C	A	-	A	-	-	D	D	D	-	C	A	C	-	D	A	-	C	A	A	D	-	A	C	D	D	D	-	-	-	-	-	-	A	-
Fluosilicate Bath 95°F	A	C	D	-	A	-	-	D	D	D	-	C	A	C	-	D	C	-	C	C	A	D	-	B	C	D	D	D	-	-	-	-	-	-	B	-
Fluoride Bath 130°F	A	C	A	-	A	-	-	D	D	D	-	C	A	D	-	D	C	-	D	C	A	D	-	B	C	D	D	D	-	-	-	-	-	-	B	-
Black Chrome Bath 115°F	A	C	A	-	A	-	-	D	D	D	-	C	A	C	-	D	A	-	C	A	A	D	-	A	C	C	D	C	-	-	-	-	-	-	A	-
Barrel Chrome Bath 95°F	A	C	A	-	A	-	-	D	D	D	-	C	A	D	-	D	C	-	D	C	A	D	-	A	C	D	D	D	-	-	-	-	-	-	A	-
Copper Plating (Cyanide)																																				
Cu Strike Bath 120°F	A	B	A	-	A	-	A	A	A	A	-	B	A	A	-	-	-	-	-	A	-	A	-	C	A	A	A	A	-	-	-	-	-	-	C	-
Rochell Salt Bath 150°F	D	C	A	-	D	-	-	A	A	B	-	A	A	A	-	C	D	-	-	A	A	A	-	D	A	A	B	A	-</							



# MATERIAL COMPATIBILITY

**Ratings-chemical effect**

- A - No effect - Excellent
- B - Minor effect - Good
- C - Moderate effect - Fair
- D - Sever effect - Not recommended

**Explanation of footnotes**

1. Satisfactory to 72°F
2. Satisfactory to 120°F
3. Satisfactory for O-rings

	CPVC	Epoxy	Polypropylene	Polyethylene	PVC	Cyolac ® (ABS)	Phenolic	Nylon	Noryl ®	Delrin ® (Acetal)	Ryton ® to 200°F	Kynar ® (PVDF)	Teflon ®	Stainless steel (316)	Stainless steel (304)	Stainless steel (440)	Titanium	Carpenter 20	Cast bronze	Cast iron	Aluminum	Hastelloy C	Carbon,ceramic	Caramagnet A	Viton ®	Buna N	Neoprene ®	Nitrile	Natural rubber	Hypalon ®	EPDM	Kei-F®	Tygon	Silicone	Ceramic	Carbon/graphite					
Soap Solutions	A	A	A	C <sup>2</sup>	A	-	A	A <sup>1</sup>	A <sup>1</sup>	A	A	A	A	A	A	A	A	A	A	C	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A		
Soda Ash (see Sodium Carbonate)																																									
Sodium Acetate	A	A	A	B <sup>2</sup>	B <sup>1</sup>	-	-	B <sup>1</sup>	A <sup>1</sup>	B	A	A	A	A	B	B <sup>1</sup>	B <sup>1</sup>	A	B	A	-	B	A	A	-	D	B	B	B	A	D	A	A	-	D	A	A	A	A		
Sodium Aluminate	-	A	-	-	-	-	-	A <sup>1</sup>	A	B	A	-	-	A	A	A	-	A	A	B	-	-	B	A	-	A	A	A	A	B	-	-	A	-	-	-	-	-	-	-	
Sodium Bicarbonate	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	B	A	A	A	A	A	A	A	B	A	B	A <sup>2</sup>	A	A	A	C	D	B <sup>1</sup>	A	A	A	B	B	B	A	D	A	A	B	D	A	A	A	A		
Sodium Bisulfate	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	C	A	A <sup>1</sup>	A <sup>1</sup>	B	A	A	A	A	B <sup>1</sup>	D	D	A	A <sup>2</sup>	C	D	D	B <sup>2</sup>	A	-	A	B	C	B	A	-	A	A <sup>2</sup>	B	-	-	A	A	A		
Sodium Bisulfite	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	B	D	C <sup>1</sup>	A <sup>1</sup>	B	A	A	A	A	B <sup>1</sup>	B <sup>1</sup>	C	A	B <sup>1</sup>	C	D	D	B	A	-	A	A	A	A	A	A	A	A	A	A	-	B	A	A	A	
Sodium Borate (Borax)	A <sup>2</sup>	A	A <sup>2</sup>	A <sup>2</sup>	A <sup>2</sup>	-	-	A <sup>1</sup>	A <sup>1</sup>	-	A	A	A	A	B <sup>2</sup>	C	A	A	A	A	-	C	A	-	-	-	A	A	A	A	A	A	A	A	-	-	-	A	-	A	A
Sodium Carbonate	A <sup>2</sup>	C <sup>1</sup>	A	B <sup>2</sup>	A <sup>2</sup>	C	A	B <sup>1</sup>	A	A <sup>1</sup>	A	A	A	A	A	B	B <sup>1</sup>	A <sup>1</sup>	A <sup>2</sup>	B	A	D	A	B	-	A	A	A	A	A	A	A	A	A	B	A	B	A	A	A	
Sodium Chlorate	A <sup>1</sup>	A	A	B <sup>2</sup>	A <sup>2</sup>	-	-	D	A <sup>1</sup>	A	A	A	A	A	B <sup>1</sup>	B <sup>1</sup>	B	A	B <sup>1</sup>	B	-	C <sup>1</sup>	B <sup>1</sup>	A	-	A	C	A	C	A	A	A	A	A	-	B	-	-	A	C	
Sodium Chloride	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	B	A	A <sup>1</sup>	A	A <sup>1</sup>	A	A	A	A	C	B	C	A	B	C	A	C	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	A	A	A	
Sodium Chromate	-	C	-	-	-	-	D	D	A	D	A	-	-	A	B <sup>1</sup>	B	-	B	A	B	A	A	A	-	-	A	A	A	A	-	-	-	-	-	-	-	-	-	-	-	
Sodium Cyanide	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	-	A	A <sup>1</sup>	A <sup>1</sup>	A	A	A	A	A	A <sup>1</sup>	B <sup>1</sup>	A <sup>1</sup>	A	A	D	A	D	A	A	-	A	A	A	A	A	A	A	A	A	A	-	-	-	-	-	-
Sodium Fluoride	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	-	-	B	A <sup>2</sup>	-	-	A	A	A <sup>1</sup>	D	D	C <sup>1</sup>	A	C	C	-	B	A	-	-	A	A <sup>1</sup>	D	A <sup>1</sup>	D	-	-	-	-	-	-	-	-	-	-	
Sodium Hydrosulfite	C	-	-	-	C	-	-	A	-	-	-	-	-	A	-	-	-	-	-	C	-	A	A	-	-	A	-	A	-	-	-	-	-	-	-	-	-	-	-	-	
Sodium Hydroxide (20%)	A	A <sup>2</sup>	A	A <sup>2</sup>	A	C	C	A	A	A	A	-	-	A	A	B <sup>2</sup>	A <sup>2</sup>	A <sup>1</sup>	A	D	A	D	B	C	A	B	B	B	B	A	A	A	A	B	B	D	A	A <sup>2</sup>	A	A	
Sodium Hydroxide (50%)	A	B <sup>2</sup>	A	A <sup>2</sup>	A	C	D	A	A	C	A	A	A	A	B	B <sup>1</sup>	B	B <sup>1</sup>	B	D	C	D	D	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
Sodium Hydroxide (80%)	A	A <sup>1</sup>	A	B <sup>2</sup>	A	C	D	C	A	D	A	-	-	A <sup>1</sup>	C	B <sup>1</sup>	B	D	B	D	C	D	A <sup>1</sup>	C	C	C	B	B	B	B	A	A	A	A	C	C	D	A	A <sup>2</sup>	A	
Sodium Hypochlorite (<20%)	C <sup>2</sup>	C	B	A	A	-	D	D	A	D	A	A	A	A	C	C	D	C	C	C	D	D	D	A	D	B	A	B	B	B	C	B	B	A	C	B	A	B	A	B	
Sodium Hypochlorite (100%)	C <sup>2</sup>	D	B	B <sup>2</sup>	C <sup>2</sup>	-	D	D	A	D	A	A	A	A	D	D	D	C	C	D	D	D	D	B	-	A	B	B	B	C	B	A	B	B	C	B	A	-	B	D	C
Sodium Hyposulfate	-	C	-	-	-	-	-	-	-	-	-	-	-	A	A	A	-	-	-	D	-	D	-	-	-	-	-	C	-	C	-	-	-	-	-	-	-	-	-	-	
Sodium Metaphosphate	A <sup>1</sup>	A	A <sup>1</sup>	A <sup>1</sup>	B <sup>2</sup>	-	A	A <sup>1</sup>	-	B	-	-	-	A	A	A	B	-	A	C	D	C	-	A	-	-	A	A	B	A	A	B	A	-	-	-	-	-	-	-	-
Sodium Metasilicate	A	A	A	-	A	-	-	-	-	D	-	-	-	A	A	A	A	-	A	B	-	D	A	A	-	-	A	A	A	A	-	-	-	-	-	-	-	-	-	-	-
Sodium Nitrate	A	A	A	A <sup>2</sup>	A <sup>2</sup>	-	A	A <sup>1</sup>	A <sup>1</sup>	A	A	A	A	A	B <sup>1</sup>	B <sup>1</sup>	B <sup>1</sup>	A	B	C	A	B	B	A	A	A	B	B	B	B	A	A	A	B	D	A	C	A	A	C	
Sodium Perborate	A <sup>1</sup>	B	A	A <sup>1</sup>	A <sup>2</sup>	-	A	B <sup>1</sup>	A	B	-	-	-	A	B	B	B	-	B	D	C	C	B	A	-	-	A	B	B	B	B	B	A	A	-	B	A	C	A	C	
Sodium Peroxide	A <sup>2</sup>	C	B	A	B <sup>2</sup>	-	D	A <sup>1</sup>	-	D	-	A	-	A	A	A	B	-	A	D	C	C	B	A	-	-	A	B	B	B	B	B	A	A	-	D	A	A	A	A	
Sodium Polyphosphate	A <sup>1</sup>	A	A	A	A <sup>1</sup>	-	A	A <sup>1</sup>	A <sup>1</sup>	B	-	A	-	A	B	B	B	A	B	C	D	D	A	A	-	-	A	A	B	A	A	A	A	A	A	-	D	A	A	A	A
Sodium Silicate	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	-	A	A <sup>1</sup>	A <sup>1</sup>	C	A	A	A	A	A	B	B	A	B	A	A	D	B	A	-	-	A	A	A	A	A	A	A	A	B	-	-	-	-	-	-
Sodium Sulfate	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	-	A	A	A	B	A	A	A	A	B	B <sup>1</sup>	D	A	B	C	A	A	B	A	-	-	A	A	A	A	B	A	A	A	-	-	-	-	-	-	-
Sodium Sulfide	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	-	D	A <sup>1</sup>	A	B	A	A	A	A	B	D	D	A	B <sup>1</sup>	D	A	D	B <sup>1</sup>	A	-	-	A	A	A	A	B	A	A	A	A <sup>1</sup>	B	A	A	A	A	
Sodium Sulfite	A <sup>2</sup>	A	A <sup>2</sup>	B <sup>1</sup>	A <sup>2</sup>	-	A	D	A	-	-	A	-	A	B	A	C <sup>1</sup>	A	B	C	A	D <sup>1</sup>	B	A	-	-	A	A	A	A	B	A	A	A	A	A	A	A	A	A	A
Sodium Tetraborate	A	A	-	A <sup>2</sup>	A <sup>2</sup>	-	-	A	A	B	-	-	-	A	A <sup>2</sup>	A	C	-	A	-	-	C	-	A	-	-	A	A	-	A	-	-	-	-	-	-	-	-	-	-	
Sodium Thiosulfate (hypo)	A <sup>2</sup>	A	A <sup>2</sup>	A	A <sup>2</sup>	-	A	B	A	C <sup>1</sup>	A	A	A	A	A <sup>2</sup>	B	C	A	A <sup>2</sup>	D	C	A	A <sup>2</sup>	A	-	-	A	B	A	B	B	A	A	-	-	-	-	-	-	-	
Sorghum	-	A	-	-	-	-	D	A	-	A	-	-	-	-	A	A	-	-	A	D	A	-	-	-	-	-	A	A	A	A	-	-	-	-	-	-	-	-	-	-	
Soy Sauce	-	A	-	-	-	-	D	A	A	A	-	-	-	-	-	A	A	-	-	A	D	A	-	-	-	-	-	A	A	A	A	D	-	-	-	-	-	-	-	-	-
Stannic Chloride	A <sup>2</sup>	A	A	A <sup>2</sup>	A <sup>2</sup>	-	-	B <sup>1</sup>	A <sup>1</sup>	C	A	A	A	A	D	D	D	A	A	D	D	D	B	-	-	-	A	A	D	A	A	D	B	A	-	-	-	-	-	-	-
Stannic Fluoborate	-	A	-	-	-	-	A	-	A	C	-	-	-	-	-	A	-	-	-	D	D	-	-	-	-	-	-	A	A	A	-	-	-	-	-	-	-	-	-	-	-
Stannous Chloride	A <sup>2</sup>	A	A	B <sup>2</sup>	A <sup>1</sup>	-	-	C <sup>1</sup>	A <sup>2</sup>	-	A <sup>1</sup>	A	-	A	A <sup>2</sup>	C <sup>2</sup>	C <sup>1</sup>	A	A <sup>1</sup>	D	-	D	B	-	-	-	A	A	A	A	A	A	A	A	B	-	-	-	-	-	
Starch	A	A	A <sup>2</sup>	B	A	-	A	A <sup>1</sup>	A <sup>2</sup>	A	-	-	-	A	A	A	-	-	-	A	C	A	-	-	-	-	A	C	A	C	-	-	-	-	-	-	-	-	-	-	
Stearic Acid	B <sup>2</sup>	B	A <sup>2</sup>	B <sup>1</sup>	B <sup>2</sup>	-	D	A <sup>2</sup>	A	A	-	A	-	A	A	B	B	A	B	C	C	B	B	A	A	-	-	A	B	B	B	B	B	B	B	B	B	B	B	B	B
Stoddard Solvent	C <sup>1</sup>	A	C	C <sup>2</sup>	C <sup>1</sup>	B	D	A	D	A	A	A	A	A	A	A	-	-	A	A	A	A	A	-	-	-	A	A	A	A	D	D	D	D	D	D	D	D	D	D	
Styrene	D	A	-	-	D	-	D	A <sup>1</sup>	A	A	-	-	-	-	A	A	A	-	-	A	A	-	D	A	-	-	B	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Sugar (Liquids)	-	A	A	-	-	B	-	A <sup>1</sup>	A <sup>2</sup>	A	-	-	-	-	A	A	A	A	-	A	-	A	A	A	A	-	-	A	A	B	A	A	B	A	-	-	-	-	-	-	-
Sulfate (Liquors)	B <sup>2</sup>	A	A	A <sup>2</sup>	B	-	D	B <sup>1</sup>	-	D	-	A	-	A	B	B	A	-	B	D	D	D	B	A	-	-	A	A	A	A	-	-	-	-	-	-	-	-	-	-	-
Sulfur Chloride	C <sup>1</sup>	C	C <sup>1</sup>	C <sup>1</sup>	C <sup>1</sup>	-	-	A <sup>1</sup>	A	D	-	A <sup>1</sup>	-	A	D	D	D	D	B	D	D	D	A	C	-	-	A	D	D	D	D	D	D	D	D	D	D	D	D	D	D
Sulfur Dioxide	A <sup>2</sup>	A <sup>1</sup>	A <sup>1</sup>	B <sup>1</sup>	A <sup>1</sup>	D	-	C	A	B	A	A	A	A	A <sup>1</sup>	D	D	A	B	B	-	B	C	A	-	-	A	D	B	D	B	C	A	A	C	B	A	A	A	A	
Sulfur Dioxide (dry)	A <sup>2</sup>	A <sup>1</sup>	A <sup>1</sup>	A <sup>1</sup>	A <sup>2</sup>	-	A	B <sup>1</sup>	A	B	A	A	A	A	A	D	D	A	B	A	A	B	B	A	-	-	A	D	D	D	B	D	A	A	C	B	A	A	A	A	
Sulfur Trioxide (dry)	A																																								

