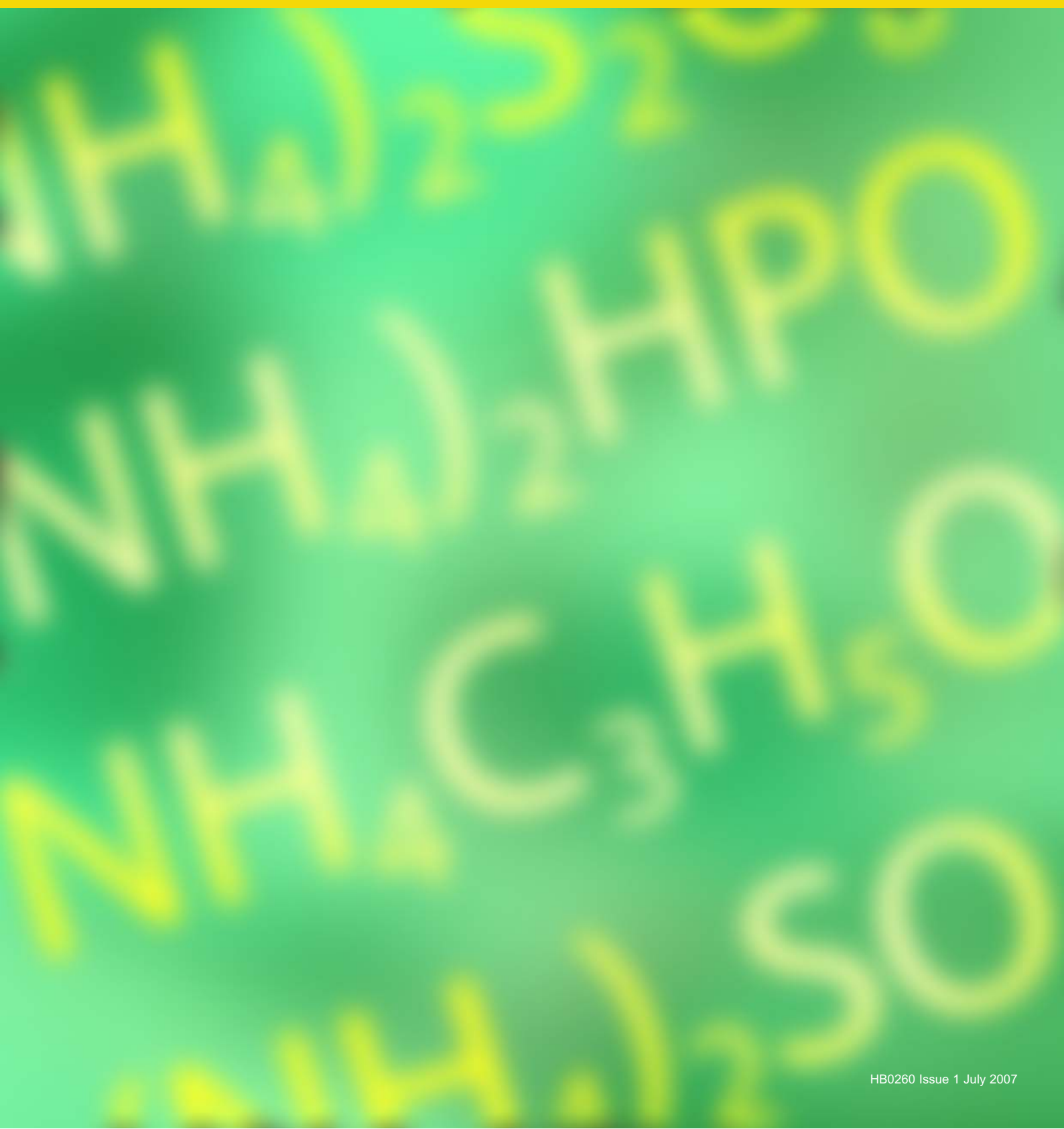


# Chemical compatibility **CHART**





# Watson-Marlow Bredel chemical compatibility chart

This table indicates the suitable of tubing and other materials for use with a selection of duty fluids. It is intended as a general guide only. Variations in behaviour can occur due to factors such as temperature and pressure. In all cases, users are advised to carry out an immersion test using the duty fluid and the intended tubing material in the conditions expected. Sample lengths of Watson-Marlow Bredel tubing are available for this purpose.

Materials listed:

Rubber	Natural rubber	STA-PURE®	Hybrid composite
Nitrile	Nitrile rubber	CHEM-SURE®	Hybrid composite
Nitrile X	Nitrile rubber X		Mild steel
EPDM	Ethylene propylene rubber	SS316	316 stainless steel
Hypalon®	Chlorosulphonated polyethylene		Aluminium
Petroproof®	Thermoplastic elastomer TPE		Cast iron
Bioprene®	Thermoplastic elastomer TPE	PVC	Polyvinyl chloride
Marprene®	Thermoplastic elastomer TPE	PTFE	Polytetrafluoroethylene (Teflon®)
Pumpsil®	Platinum-cured silicone		Polypropylene
Neoprene®	Chloroprene CR	PVDF	Polyvinylidene fluoride (Kynar®)
Fluorel®	Fluorocarbon FKM		Epoxy
Tygon®	Polyvinyl chloride		



**A: no effect**  
Should be acceptable for use in a pump

**B: some effect**  
Use if no alternative is available  
or if short service is acceptable

**C: severe effect**  
Do not use

?: no data available

Duty fluid	Molecular formula	Chemical Abstract Service number	Rubber	Nitrile	Nitrile X	EPDM	Hypalon	Petroproof	Bioprene	Marprene	Pumpsil	Neoprene	Fluorel	Tygon	STA-PURE	CHEM-SURE	Mild steel	SS316	Aluminium	Cast iron	PVC	PTFE	Polypropylene	PVDF	Epoxy	
ACETAL	C <sub>6</sub> H <sub>14</sub> O <sub>2</sub>	105-57-7	C	C	C	C	C	C	?	?	?	?	?	?	?	?	C	C	C	?	?	A	C	?	?	
ACETIC ACID 10%	CH <sub>3</sub> COOH	64-19-7	A	C	C	A	A	A	A	A	B	A	A	A	B	?	C	A	?	?	A	A	A	A	?	
ACETIC ACID 20%	CH <sub>3</sub> COOH	64-19-7	B	C	C	A	A	C	A	A	B	A	A	A	B	?	C	A	A	?	A	A	A	A	A	
ACETIC ACID 30%	CH <sub>3</sub> COOH	64-19-7	B	C	C	A	A	C	A	A	B	B	B	B	B	?	C	A	A	C	A	A	C	A	?	
ACETIC ACID 50%	CH <sub>3</sub> COOH	64-19-7	B	C	C	A	A	C	A	A	B	B	B	B	B	?	C	A	A	C	A	A	C	A	?	
ACETIC ACID 99%	CH <sub>3</sub> COOH	64-19-7	C	C	C	A	B	C	B	B	B	B	C	C	B	?	C	A	A	C	A	A	C	A	?	
ACETIC ACID (ICE)	CH <sub>3</sub> COOH	64-19-7	C	C	C	B	B	C	B	B	B	B	?	?	B	A	C	A	A	C	?	A	B	A	A	
ACETIC ACID ANHYDRIDE	C <sub>4</sub> H <sub>6</sub> O <sub>3</sub>	108-24-7	C	C	C	B	C	C	C	C	B	B	C	?	B	A	C	A	?	?	C	A	C	B	A	
ACETONE	C <sub>3</sub> H <sub>6</sub> O	67-64-1	A	C	C	A	C	B	B	C	C	C	C	C	C	A	A	A	A	A	A	C	A	A	C	
ACETONITRILE	C <sub>2</sub> H <sub>3</sub> N	75-05-8	C	C	C	C	C	C	C	?	A	C	C	?	A	C	A	A	A	A	?	A	A	A	?	
ACETOPHENONE	C <sub>8</sub> H <sub>8</sub> O	98-86-2	C	C	C	C	C	C	C	C	C	C	C	C	C	?	C	C	C	?	?	A	C	?	?	
ACETYLENE	C <sub>2</sub> H <sub>2</sub>	74-86-2	C	B	A	C	B	A	A	A	B	A	A	C	B	A	A	A	A	A	A	A	A	?	A	
ACRYL ARYL SULPHONATE SLURRY			A	C	C	A	B	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
ACRYLATE (POLYMER)			?	?	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
ACRYLATE (MONOMER)			C	C	C	C	C	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
ACRYLIC ACID (323 K)	C <sub>3</sub> H <sub>4</sub> O <sub>2</sub>	79-10-7	C	C	C	C	C	C	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
ACRYLIC MONOMER			C	C	C	C	C	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
ACRYLONITRILE	C <sub>3</sub> H <sub>3</sub> N	107-13-1	C	C	C	C	C	C	C	C	C	C	C	C	C	A	A	A	A	A	A	A	A	A	?	A
AIR	78% N <sub>2</sub> + 21% O <sub>2</sub>	132259-10-0	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
ALCOHOL	C <sub>2</sub> H <sub>5</sub> OH	64-17-5	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	?	?	?	?	?	A
ALKYLARYL BENZENE SULPHONATE			C	A	A	A	C	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	
ALLYL ALCOHOL	C <sub>3</sub> H <sub>5</sub> OH	107-18-6	A	B	B	A	B	A	A	A	?	A	A	B	?	?	?	A	A	A	C	A	A	A	?	
ALLYL CHLORIDE	C <sub>3</sub> H <sub>5</sub> Cl	107-05-1	C	C	C	C	C	C	C	C	A	C	B	?	A	?	?	A	C	B	?	A	A	A	?	
ALUM	Al(SO <sub>4</sub> ) <sub>2</sub> ·12H <sub>2</sub> O	977007-61-6	A	A	A	A	A	?	A	A	A	A	A	A	A	?	C	C	?	?	A	A	A	A	?	
ALUMINIUM CHLORIDE	AlCl <sub>3</sub>	7446-70-0	A	A	A	A	A	A	A	A	B	A	A	A	B	?	C	C	C	C	B	A	A	A	A	
ALUMINIUM FLUORIDE	AlF <sub>3</sub>	7784-18-1	A	A	A	A	A	A	A	A	B	A	A	B	B	?	C	C	?	B	A	A	A	A	A	
ALUMINIUM HYDROXIDE	Al(OH) <sub>3</sub>	21645-51-2	A	A	A	A	A	A	A	A	A	A	A	A	A	?	C	C	?	?	A	A	A	A	A	

**A: no effect**  
Should be acceptable for use in a pump

**B: some effect**  
Use if no alternative is available  
or if short service is acceptable

**C: severe effect**  
Do not use

?: no data available

Duty fluid	Molecular formula	Chemical Abstract Service number	Rubber	Nitrile	Nitrile X	EPDM	Hypalon	Petroproof	Bioprene	Marprene	Pumpsil	Neoprene	Fluorel	Tygon	STA-PURE	CHEM-SURE	Mild steel	SS316	Aluminium	Cast iron	PVC	PTFE	Polypropylene	PVDF	Epoxy
ALUMINIUM SILICATE	Al <sub>2</sub> SiO <sub>5</sub>	1332-58-7	A	A	A	A	A	A	A	A	A	A	A	A	A	?	?	?	?	?	?	?	?	?	?
ALUMINIUM SULPHATE	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	10043-01-3	A	A	A	A	A	A	A	A	A	A	A	A	A	?	?	?	?	?	C	A	A	A	A
AMMONIA ANHYDRIC			A	B	A	A	B	A	A	C	A	C	B	C	A	?	A	A	A	A	A	A	A	A	A
AMMONIA (AQUEOUS)	NH <sub>3</sub> in H <sub>2</sub> O		A	A	B	A	A	A	A	A	B	B	B	B	A	?	A	A	A	A	A	?	A	?	A
AMMONIA (GAS)	NH <sub>3</sub> (g)	7664-41-7	A	A	A	A	A	A	A	A	A	A	C	C	A	A	?	A	A	A	?	A	A	A	?
AMMONIUM BICARBONATE	NH <sub>4</sub> HCO <sub>3</sub>	1066-33-7	A	A	A	A	A	A	A	A	A	A	A	A	A	?	A	A	A	A	?	A	?	?	?
AMMONIUM BISULPHATE 50%	NH <sub>4</sub> HSO <sub>4</sub>	7803-63-6	A	C	C	A	A	B	A	A	A	A	A	A	A	?	?	?	?	?	?	?	?	?	?
AMMONIUM BROMIDE	NH <sub>4</sub> Br	12124-97-9	B	C	C	A	A	B	A	A	A	A	A	A	A	?	?	?	?	?	?	?	?	?	?
AMMONIUM CARBONATE	(NH <sub>4</sub> ) <sub>2</sub> CO <sub>3</sub>	8000-73-5	A	A	A	A	A	A	A	A	B	A	A	A	B	A	C	C	A	A	A	A	A	A	A
AMMONIUM CHLORIDE	NH <sub>4</sub> Cl	12125-02-9	A	A	A	A	A	A	A	A	B	A	A	A	B	A	C	C	C	A	A	A	A	A	A
AMMONIUM FORMATE	NH <sub>4</sub> CO <sub>2</sub>	540-69-2	A	A	B	A	A	B	A	A	A	A	A	A	A	?	?	?	?	?	?	?	?	?	?
AMMONIUM HYDROXIDE	NH <sub>4</sub> OH	1336-21-6	A	A	A	A	A	A	A	A	A	A	A	A	A	?	?	?	?	?	?	?	?	?	?
AMMONIUM METAPHOSPHATE	NH <sub>4</sub> PO <sub>3</sub>		A	A	A	A	A	A	A	A	A	A	A	A	A	?	?	?	?	?	?	?	?	?	?
AMMONIUM NITRATE	NH <sub>4</sub> NO <sub>3</sub>	6484-52-2	A	A	A	A	A	A	A	A	B	A	A	A	B	A	A	A	A	A	A	B	A	A	A
AMMONIUM NITRITE	NH <sub>4</sub> NO <sub>2</sub>	13446-48-5	A	A	A	A	A	A	A	A	B	A	A	A	B	A	?	?	?	?	?	?	?	?	?
AMMONIUM PERSULPHATE	(NH <sub>4</sub> ) <sub>2</sub> S <sub>2</sub> O <sub>8</sub>	7727-54-0	B	B	A	A	?	A	A	C	A	A	A	A	C	?	C	C	B	C	A	A	A	A	?
AMMONIUM PHOSPHATE	(NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub>	7783-28-0	A	A	A	A	A	A	A	A	A	A	A	A	A	?	C	C	C	C	C	A	A	A	?
AMMONIUM PROPIONATE	NH <sub>4</sub> C <sub>3</sub> H <sub>5</sub> O <sub>2</sub>	17496-08-1	A	C	C	A	B	A	A	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
AMMONIUM SULPHATE	(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	7783-20-2	A	A	A	A	A	A	A	A	A	A	A	A	A	?	A	C	C	A	A	A	A	A	A
AMMONIUM THIOCYANATE	NH <sub>4</sub> SCN	1762-95-4	A	A	A	A	A	A	A	A	A	A	A	A	A	?	?	?	?	?	B	?	A	?	?
AMYL ACETATE	C <sub>7</sub> H <sub>14</sub> O <sub>2</sub>	628-63-7	B	B	C	B	C	B	C	C	C	C	C	C	C	B	?	A	A	A	A	C	?	A	A
AMYL ALCOHOL	C <sub>5</sub> H <sub>11</sub> OH	71-41-0	B	B	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C
AMYL AMINE	C <sub>5</sub> H <sub>11</sub> NH <sub>2</sub>	110-58-7	C	C	C	C	C	B	C	C	?	C	C	?	?	?	?	?	?	?	?	?	?	?	?
AMYL BORATE	C <sub>5</sub> H <sub>11</sub> BO <sub>3</sub>		B	C	C	B	C	?	C	C	A	A	?	C	?	?	?	?	?	?	?	?	?	?	?
AMYL BROMIDE	C <sub>5</sub> H <sub>11</sub> Br	110-53-2	B	C	C	B	C	C	C	C	?	C	A	?	?	?	?	?	?	?	?	?	?	?	?
AMYL CHLORIDE	C <sub>5</sub> H <sub>11</sub> Cl	543-59-9	C	C	C	C	C	C	C	C	C	C	B	C	C	?	?	?	A	C	A	C	A	C	A
AMYL CHLORONAPHTHALENE	C <sub>15</sub> H <sub>17</sub> Cl		C	C	C	C	C	C	C	C	C	C	A	C	C	?	?	?	?	?	?	?	?	?	?

**A: no effect**  
Should be acceptable for use in a pump

**B: some effect**  
Use if no alternative is available  
or if short service is acceptable

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Do not use

?: no data available

Duty fluid	Molecular formula	Chemical Abstract Service number	Rubber	Nitrile	Nitrile X	EPDM	Hypalon	Petroproof	Bioprene	Marprene	Pumpsil	Neoprene	Fluorel	Tygon	STA-PURE	CHEM-SURE	Mild steel	SS316	Aluminium	Cast iron	PVC	PTFE	Polypropylene	PVDF	Epoxy
AMYL ETHER	$C_{10}H_{22}O$	693-65-2	C	C	B	C	C	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
AMYL IODIDE	$C_8H_{11}I$	628-17-1	C	C	C	C	C	C	C	C	C	A	C	C	C	C	C	C	C	C	C	C	C	C	C
AMYL NAPHTHALENE	$C_{16}H_{18}$		C	C	C	C	C	B	C	C	C	C	A	C	C	C	C	C	C	C	C	C	C	C	C
AMYL PHENOL	$C_{10}H_{17}O$	1322-06-1	C	C	C	C	C	B	C	C	C	C	A	C	C	C	C	C	C	C	C	C	C	C	C
AMYLENE	$C_6H_{10}$	109-67-1	C	C	B	C	C	A	C	C	C	A	A	C	C	C	C	C	C	C	C	C	C	C	C
ANILINE	$C_6H_5NH_2$	62-53-3	C	C	C	C	C	C	B	B	B	C	A	C	B	A	C	A	A	A	C	A	C	A	A
ANILINE PAINT			B	C	B	C	C	C	C	C	C	C	B	C	B	C	C	C	C	C	C	C	C	C	C
ANIMAL FAT			C	B	A	C	B	A	C	C	B	B	A	B	B	C	C	C	C	C	C	C	C	C	C
ANIMAL GLUE			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
ANTHRAQUINONE (55 °C)	$C_{14}H_8O_2$	84-66-1	A	B	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
ANTI-FREEZE	$C_2H_6O_2$	107-21-1	A	A	A	A	A	A	A	A	A	A	A	B	B	A	A	A	A	A	A	A	A	A	A
ANTIMONY CHLORIDE 50%	$SbCl_3$	10025-91-9	B	C	C	A	A	C	A	A	A	C	B	A	A	C	C	C	C	C	C	C	C	C	C
AQUA REGIA	<i>conc.</i> $HNO_3 + HCl (1:3)$	8007-56-5	C	C	C	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
ARSENIC TRIOXIDE	$As_2O_3$	1327-53-3	A	A	A	A	A	A	A	A	A	A	A	A	B	C	C	C	C	C	C	C	C	C	C
ARSENIC ACID	$H_3AsO_4$	7778-39-4	C	C	C	B	A	C	C	C	C	C	A	A	B	A	A	A	A	A	A	A	A	A	A
ASCORBIC ACID	$C_6H_8O_6$	50-81-7	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
ASPHALT		8052-42-4	C	B	A	C	C	C	C	C	C	B	A	B	C	A	A	A	A	A	A	A	A	A	A
ASTOR OIL 1-2-3			C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
AVIATION GASOLINE			C	B	A	C	C	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
BARIUM CARBONATE	$BaCO_3$	513-77-9	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
BARIUM CHLORIDE	$BaCl_2$	10361-37-2	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
BARIUM FERRITE	$BaO.6Fe_2O_3$	11138-11-7	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
BARIUM HYDROXIDE	$Ba(OH)_2.8H_2O$	12230-71-6	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
BARIUM SULPHATE	$BaSO_4$	7727-43-7	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
BARIUM SULPHIDE	$BaS$	21109-95-5	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
BEER			A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
BEET ROOT SYRUP			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

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or if short service is acceptable

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Do not use

?: no data available

Duty fluid	Molecular formula	Chemical Abstract Service number	Rubber	Nitrile	Nitrile X	EPDM	Hypalon	Petroproof	Bioprene	Marprene	Pumpsil	Neoprene	Fluorel	Tygon	STA-PURE	CHEM-SURE	Mild steel	SS316	Aluminium	Cast iron	PVC	PTFE	Polypropylene	PVDF	Epoxy
BENZALDEHYDE	C <sub>7</sub> H <sub>6</sub> O	100-52-7	C	C	C	B	C	C	A	A	B	C	C	C	B	A	C	C	A	A	C	?	A	B	A
BENZENE (BENZOL)	C <sub>6</sub> H <sub>6</sub>	71-43-2	C	C	C	C	C	C	C	C	C	C	C	C	C	A	C	C	A	A	C	A	B	B	B
BENZENESULPHONIC ACID	C <sub>6</sub> H <sub>6</sub> SO <sub>3</sub> H	98-11-3	C	C	B	C	C	C	?	?	C	B	A	C	C	A	?	A	B	A	?	A	C	A	?
BENZOYL CHLORIDE	C <sub>7</sub> H <sub>5</sub> OCl	98-88-4	C	C	C	C	C	C	C	C	C	C	B	?	C	A	C	C	C	A	?	A	B	A	?
BENZYL ALCOHOL	C <sub>7</sub> H <sub>8</sub> O	100-51-6	C	C	C	C	C	B	C	C	?	B	A	B	?	A	A	A	A	A	?	A	A	A	?
BENZYL BENZOATE	C <sub>14</sub> H <sub>12</sub> O <sub>2</sub>	120-51-4	C	C	C	C	C	C	C	C	?	C	A	?	C	?	A	A	A	A	?	A	?	?	?
BIRD LIME (GLUE)			A	A	A	A	A	?	?	?	?	?	?	?	?	?	A	A	A	?	?	A	?	?	?
BICALCIUM PHOSPHATE	CaHPO <sub>4</sub>		A	?	?	A	A	A	?	?	?	?	?	?	?	?	A	A	A	?	?	?	?	?	?
BISMUTH CARBONATE	(BiO) <sub>2</sub> CO <sub>3</sub>	5892-10-4	A	A	A	A	A	A	A	A	?	A	A	?	?	?	A	A	?	?	?	A	A	A	?
BLACK SULPHATE LIQUOR			A	A	A	A	A	?	C	C	B	B	A	?	B	?	?	A	B	A	?	A	?	?	?
BLAST FURNACE GAS			C	A	A	C	C	?	?	?	A	C	A	?	A	?	?	?	?	?	?	A	?	?	?
BOR(AC)IC ACID	H <sub>3</sub> BO <sub>3</sub>	10043-35-3	A	A	A	A	A	?	A	A	A	A	A	A	A	A	?	?	A	C	?	A	A	A	A
BORAX	Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> ·10H <sub>2</sub> O	1303-96-4	A	A	A	A	A	?	A	A	B	A	A	A	B	?	A	A	A	A	A	A	A	A	?
BROMINE	Br <sub>2</sub>	7726-95-6	C	C	C	C	B	?	C	C	C	C	A	B	C	?	C	C	A	B	C	?	C	?	C
BUTADIENE	C <sub>4</sub> H <sub>6</sub>	106-99-0	C	B	A	C	C	A	C	C	C	C	A	C	C	B	A	A	A	A	?	A	C	A	A
BUTANE	C <sub>4</sub> H <sub>10</sub>	106-97-8	C	C	A	C	C	A	C	C	C	B	A	C	C	B	A	A	A	A	?	A	C	A	A
BUTANE FLUID	C <sub>4</sub> H <sub>10</sub>	106-97-8	C	B	A	C	C	A	C	C	C	B	A	C	C	?	?	?	?	?	?	A	?	?	?
BUTTER			C	A	A	C	C	A	?	?	B	B	A	B	A	?	A	A	C	?	?	A	?	?	A
BUTTER ACID	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>	107-92-6	B	B	?	C	C	C	A	A	?	?	?	?	?	?	?	?	?	?	?	A	?	?	?
BUTYL ACETATE	C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>	123-86-4	C	C	C	B	C	B	C	C	C	C	C	C	C	B	A	A	A	A	C	A	B	A	B
BUTYL ALCOHOL	C <sub>4</sub> H <sub>9</sub> OH	71-36-3	B	B	A	C	A	A	A	A	B	A	A	B	A	A	A	A	A	A	A	A	A	A	A
BUTYL ALDEHYDE	C <sub>4</sub> H <sub>8</sub> O	123-72-8	C	C	C	C	C	B	A	A	C	C	C	?	C	?	?	?	?	?	?	A	?	?	?
BUTYL CELLOSOLVE (ε=2-butoxyethanol)	C <sub>6</sub> H <sub>13</sub> O <sub>2</sub>	111-76-2	C	C	B	C	A	B	?	?	C	C	B	C	C	?	A	A	?	?	?	A	?	A	?
BUTYL CELLOSOLVE ADIPATE	C <sub>6</sub> H <sub>14</sub> O <sub>2</sub>		C	C	C	C	C	?	?	?	B	C	B	?	B	?	?	?	?	?	?	A	?	?	?
BUTYL ETHER	C <sub>6</sub> H <sub>18</sub> O	142-96-1	C	C	A	C	C	A	C	C	C	B	C	?	C	B	A	A	A	A	?	A	C	A	?
BUTYL GLYCOL	C <sub>6</sub> H <sub>14</sub> O <sub>2</sub>	107-88-0	A	A	A	A	A	A	A	A	A	A	A	A	A	A	?	?	?	?	?	A	A	?	?
BUTYL IODIDE	C <sub>4</sub> H <sub>9</sub> I	542-69-8	C	C	C	C	C	C	C	C	C	C	C	C	C	?	?	?	?	?	?	A	?	?	?

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**B: some effect**  
Use if no alternative is available  
or if short service is acceptable

**C: severe effect**  
Do not use

?: no data available

Duty fluid	Molecular formula	Chemical Abstract Service number	Rubber	Nitrile	Nitrile X	EPDM	Hypalon	Petroproof	Bioprene	Marprene	Pumpsil	Neoprene	Fluorel	Tygon	STA-PURE	CHEM-SURE	Mild steel	SS316	Aluminium	Cast iron	PVC	PTFE	Polypropylene	PVDF	Epoxy
BUTYL STEARATE	C <sub>22</sub> H <sub>44</sub> O <sub>2</sub>	123-95-5	C	B	A	C	C	A	C	C	?	C	A	?	?	?	?	A	A	A	?	A	?	A	?
BUTYRONITRILE	C <sub>4</sub> H <sub>7</sub> N	109-74-0	C	C	C	C	C	C	C	C	?	C	?	?	?	?	?	?	?	?	?	?	?	?	?
CALCIUM ACETATE	Ca(C <sub>2</sub> H <sub>3</sub> O <sub>2</sub> ) <sub>2</sub>	62-54-4	A	A	A	A	A	B	A	A	C	B	C	?	C	A	?	A	?	?	?	?	A	?	?
CALCIUM BISULPHATE	Ca(HSO <sub>4</sub> ) <sub>2</sub>	10034-88-5	A	A	A	A	A	B	A	A	B	A	C	B	?	A	?	A	?	C	?	?	A	?	A
CALCIUM BISULPHITE	Ca(HSO <sub>3</sub> ) <sub>2</sub>	13780-03-5	A	A	A	A	A	B	A	A	C	A	A	B	C	?	?	?	C	C	?	?	A	A	A
CALCIUM BROMIDE	CaBr <sub>2</sub>	7789-41-5	?	?	?	A	?	A	A	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
CALCIUM CARBONATE	CaCO <sub>3</sub>	471-34-1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	B	A	A	A	A	A	A
CALCIUM CHLORATE	Ca(ClO <sub>3</sub> ) <sub>2</sub> ·H <sub>2</sub> O	10137-74-3	A	B	B	A	A	B	A	A	A	A	A	A	A	A	C	C	?	A	A	A	A	A	?
CALCIUM CHLORIDE	CaCl <sub>2</sub>	10035-04-8	A	A	A	A	A	A	A	A	A	A	A	A	A	A	?	?	A	A	A	A	A	A	?
CALCIUM FLUORIDE	CaF <sub>2</sub>	7789-75-5	A	A	B	A	A	A	A	A	?	?	?	?	?	?	?	?	A	A	?	?	?	?	?
CALCIUM HYDROXIDE	Ca(OH) <sub>2</sub>	1305-62-0	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	?	?	?	?	A	?	?
CALCIUM HYPOCHLORITE	Ca(ClO) <sub>2</sub>	7778-54-3	C	C	C	A	A	B	A	A	B	B	A	B	A	?	?	?	?	?	?	?	?	?	?
CALCIUM HYPOCHLORITE 30%	Ca(ClO) <sub>2</sub>	7778-54-3	B	B	B	A	A	B	A	A	B	B	A	B	B	A	?	?	C	C	?	?	A	A	?
CALCIUM NITRATE	Ca(NO <sub>3</sub> ) <sub>2</sub>	13477-34-4	A	A	A	A	A	A	A	A	B	A	A	?	B	A	C	C	?	?	?	?	A	A	?
CALCIUM STEARATE	Ca(C <sub>18</sub> H <sub>35</sub> O <sub>2</sub> ) <sub>2</sub>	1592-23-0	B	B	B	C	C	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
CALCIUM SULPHATE	CaSO <sub>4</sub>	7778-18-9	A	A	A	A	A	A	A	A	?	A	A	A	?	A	C	C	B	?	A	A	A	A	A
CALCIUM SULPHIDE	CaS	20548-54-3	A	A	A	A	A	A	A	A	B	A	A	?	B	?	A	A	?	A	?	A	A	A	?
CALCIUM TETRAFLUORIDE	Ca <sub>2</sub> F <sub>4</sub>		C	C	C	B	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	A	A	?
CALIC LIQUOR			A	A	A	A	A	?	?	?	A	A	A	?	A	?	?	?	?	?	?	?	A	?	?
CANE SUGAR LIQUOR			A	A	A	A	A	?	A	A	A	A	A	A	A	?	A	A	A	A	A	?	A	A	?
CARBIDE LIME / CARBIDE SLUDGE			A	A	A	A	A	A	?	?	?	A	A	?	?	?	?	?	?	?	?	?	?	?	?
CARBITOL	C <sub>6</sub> H <sub>14</sub> O <sub>3</sub>	111-90-0	C	C	A	C	C	?	C	C	B	C	B	?	B	?	?	A	A	A	?	A	?	?	?
CARBOLIC ACID (= phenol)	C <sub>6</sub> H <sub>6</sub> OH	108-95-2	C	C	C	C	C	B	C	C	C	C	A	C	C	?	?	A	A	A	?	A	B	A	B
CARBON DIOXIDE (DRY)	CO <sub>2</sub>	124-38-9	A	A	A	A	A	A	A	A	B	A	A	A	B	A	A	A	A	A	C	A	A	A	A
CARBON DIOXIDE (MOIST)	CO <sub>2</sub>	124-38-9	A	A	A	A	A	A	A	A	B	B	C	B	A	A	A	A	A	A	C	A	A	A	A
CARBON DISULPHIDE	CS <sub>2</sub>	75-15-0	C	A	A	C	C	?	?	?	C	C	A	?	C	?	A	A	A	A	C	A	C	A	C
CARBON MONOXIDE (338 K)	CO	630-08-0	A	B	B	A	A	?	A	A	A	A	A	B	A	A	A	A	A	A	?	A	A	A	A

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Duty fluid	Molecular formula	Chemical Abstract Service number	Rubber	Nitrile	Nitrile X	EPDM	Hypalon	Petroproof	Bioprene	Marprene	Pumpsil	Neoprene	Fluorel	Tygon	STA-PURE	CHEM-SURE	Mild steel	SS316	Aluminium	Cast iron	PVC	PTFE	Polypropylene	PVDF	Epoxy
CARBON TETRACHLORIDE	CCl <sub>4</sub>	56-23-5	C	C	C	C	C	C	C	C	C	C	A	C	C	B	?	?	?	?	C	A	?	?	?
CARBONIC ACID	H <sub>2</sub> CO <sub>3</sub> (CO <sub>2</sub> in H <sub>2</sub> O)	463-79-6	A	A	A	A	A	A	A	A	A	B	A	A	A	A	?	C	A	C	C	A	A	A	A
CARBOXYMETHYL CELLULOSE 12%		9000-11-7	A	A	A	A	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
CASTOR OIL		8001-79-4	C	B	A	C	C	A	C	C	A	A	A	A	A	A	?	A	A	A	A	A	A	A	?
CAUSTIC SODA (max. 50%)	NaOH	1310-73-2	B	B	A	A	A	?	A	A	A	A	A	B	A	?	?	B	?	?	A	?	A	A	?
CELLOSOLVE	C <sub>4</sub> H <sub>10</sub> O <sub>2</sub>		C	C	?	C	C	?	A	A	C	C	C	C	C	?	?	A	A	?	?	A	A	A	?
CELLOSOLVE ACETATE	C <sub>6</sub> H <sub>12</sub> O <sub>3</sub>		C	C	?	C	C	?	A	A	C	C	C	C	C	?	?	A	A	?	?	A	A	A	?
CELLULOSE ACETATE		9004-35-7	?	B	B	C	C	?	?	?	?	B	C	?	?	?	?	A	A	A	?	A	?	?	?
CHINA WOOD OIL (TUNG OIL)		8001-20-5	C	C	?	C	C	?	?	?	C	A	A	?	C	?	A	A	A	?	?	A	?	?	?
CHLORIC ACID	HClO <sub>3</sub>	7601-90-3	C	C	C	A	A	C	?	?	?	?	?	?	A	?	A	C	C	?	A	?	?	?	?
CHLORIC ACID SULPHUROUS			C	C	C	B	A	C	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
CHLORINATED SOLVENTS			C	C	C	C	C	C	C	C	C	C	A	C	C	B	?	?	?	?	?	?	?	?	?
CHLORINE AQUEOUS SOLUTION 3%	Cl <sub>2</sub> in H <sub>2</sub> O	977091-22-7	C	C	C	A	A	?	?	?	?	C	A	C	?	?	?	A	B	?	?	A	A	A	A
CHLORINE (DRY)	Cl <sub>2</sub>	7782-50-5	C	C	C	B	C	?	C	C	C	C	A	C	C	?	C	C	C	C	C	A	A	C	A
CHLORINE (MOIST)	Cl <sub>2</sub>	7782-50-5	C	C	C	A	A	?	C	C	C	C	A	B	C	?	?	A	A	B	?	A	C	A	?
CHLORINE LYE			C	C	C	A	A	?	?	?	A	A	B	B	A	?	?	?	?	?	?	A	?	?	?
CHLOROACETONE	C <sub>3</sub> H <sub>5</sub> OCl	78-95-5	C	B	B	C	C	C	C	C	C	B	C	C	B	?	?	?	?	?	?	A	?	?	?
CHLOROACETONITRILE	C <sub>2</sub> H <sub>2</sub> NCI	107-14-2	C	C	C	C	C	C	C	C	?	C	?	?	?	?	?	?	?	?	?	A	?	?	?
CHLOROBENZENE	C <sub>6</sub> H <sub>5</sub> Cl	108-90-7	C	C	C	C	C	C	C	C	C	C	B	C	C	A	A	A	A	?	C	A	?	?	?
CHLOROBROMOMETHANE	CH <sub>2</sub> ClBr	74-97-5	C	C	C	C	C	C	C	C	C	C	B	C	C	?	?	A	?	?	?	C	A	?	?
CHLOROETHYL ACETATE	C <sub>4</sub> H <sub>7</sub> O <sub>2</sub> Cl	542-58-5	C	C	C	C	C	C	C	C	C	C	B	C	C	?	?	?	?	?	?	A	?	?	?
CHLOROMETHYL	CH <sub>3</sub> Cl	74-87-3	C	C	C	C	C	C	C	C	C	C	B	C	C	?	?	?	?	?	?	A	?	?	?
CHLORONAPHTALENE	C <sub>10</sub> H <sub>7</sub> Cl	90-13-1	C	C	C	C	C	C	C	C	C	C	A	C	C	?	A	A	?	?	C	A	?	?	?
CHLORO NITROETHANE	C <sub>2</sub> H <sub>4</sub> NO <sub>2</sub> Cl	598-92-5	C	C	C	C	C	C	C	C	C	C	C	C	C	?	?	?	?	?	?	A	?	?	?
CHLOROSULPHONIC ACID	HSO <sub>3</sub> Cl	7790-94-5	C	C	C	?	C	C	C	C	C	C	C	C	C	A	?	?	?	?	?	A	?	?	?
CHLOROTOLUENE	C <sub>7</sub> H <sub>7</sub> Cl	100-44-7	C	C	C	C	C	C	C	C	?	C	A	?	?	?	A	A	A	?	?	A	?	?	?
CHLOROFORM	CHCl <sub>3</sub>	67-66-3	C	C	C	C	C	C	C	C	C	C	A	C	C	B	A	A	C	A	C	A	B	A	B

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Duty fluid	Molecular formula	Chemical Abstract Service number	Rubber	Nitrile	Nitrile X	EPDM	Hypalon	Petroproof	Bioprene	Marprene	Pumpsil	Neoprene	Fluorel	Tygon	STA-PURE	CHEM-SURE	Mild steel	SS316	Aluminium	Cast iron	PVC	PTFE	Polypropylene	PVDF	Epoxy
CHROMIC ACID 10%	CrO <sub>3</sub> .H <sub>2</sub> O	1333-82-0	C	C	C	?	A	C	A	A	C	C	A	C	C	?	C	C	A	C	A	A	C	A	B
CHROMIC ACID 25%	CrO <sub>3</sub> .H <sub>2</sub> O	1333-82-0	C	C	C	?	A	C	A	A	C	C	A	C	C	?	C	C	C	C	A	A	C	A	B
CHROMIC ACID 50%	CrO <sub>3</sub> .H <sub>2</sub> O	1333-82-0	C	C	C	?	A	C	A	A	C	C	A	C	C	?	C	C	C	C	B	A	C	A	C
CHROMIUM HYDROXIDE	Cr(OH) <sub>3</sub>	1308-14-1	C	C	C	A	A	?	A	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
CHROMIUM SULPHATE	Cr <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub>	10101-53-8	C	C	?	A	?	?	A	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
CITRIC ACID	C <sub>6</sub> H <sub>8</sub> O <sub>7</sub>	77-92-9	A	B	B	A	A	B	A	A	A	A	A	B	A	A	?	?	A	C	A	A	A	A	?
CITRUS PULP			A	B	B	A	A	B	A	A	A	A	A	B	A	A	?	?	?	?	?	?	?	?	?
COCONUT OIL		8001-31-8	C	B	A	C	C	A	C	C	A	B	A	C	A	A	A	A	A	A	A	A	A	A	?
COD LIVER OIL		8001-69-2	C	B	A	C	C	A	C	C	B	B	A	?	B	A	?	A	A	C	?	A	?	?	?
COKES OVEN GAS			C	B	A	C	C	?	?	?	B	C	A	B	B	?	A	?	?	?	?	?	?	A	?
COMPRESSOR OIL			C	A	A	C	B	A	C	C	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
COPPER ARSENATE	Cu <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub>	7778-41-8	B	B	B	A	A	?	A	A	?	A	A	A	?	?	A	A	?	?	?	?	?	?	?
COPPER(I) CHLORIDE	CuCl	7758-89-6	A	A	A	A	A	?	A	A	A	B	A	B	A	?	C	C	C	C	A	A	A	A	A
COPPER(II) CHLORIDE	CuCl <sub>2</sub>	7447-39-4	A	A	A	A	A	?	A	A	A	B	A	B	A	?	C	C	C	C	A	A	A	A	A
COPPER CYANIDE	Cu(CN) <sub>2</sub>	544-92-3	B	A	A	A	A	?	A	A	A	A	A	B	A	?	?	?	C	A	A	A	A	A	A
COPPER NITRATE	Cu(NO <sub>3</sub> ) <sub>2</sub> .3H <sub>2</sub> O	10031-43-3	A	B	B	A	A	?	A	A	?	A	A	B	?	?	?	?	C	?	A	A	A	A	A
COPPER OXYCHLORIDE	CuCl <sub>2</sub> .Cu(OH) <sub>2</sub>	1332-65-6	B	B	B	A	A	?	A	A	A	A	A	A	A	?	?	?	?	?	?	?	?	?	?
COPPER SULPHATE	CuSO <sub>4</sub> .5H <sub>2</sub> O	7758-98-7	A	B	B	A	A	?	A	A	A	A	A	B	A	?	?	?	C	C	A	A	A	A	?
COTTONSEED OIL		8001-29-4	C	B	A	C	C	A	?	?	A	B	A	B	A	A	?	A	A	B	A	A	A	A	?
CREOSOTE OIL			C	C	?	C	C	?	C	C	C	C	A	C	C	?	C	C	?	?	C	A	B	?	?
CREOSOTE WOOD			C	C	A	C	C	?	C	C	C	C	A	C	C	?	A	A	?	?	?	A	C	?	?
CREOSOTE COAL TAR			C	C	?	C	C	?	C	C	C	C	A	C	C	?	A	A	?	?	?	A	C	?	?
CREOSOL 90%, XYLOL 5%, DDT 5%			C	C	C	C	C	C	C	C	C	C	B	C	C	A	A	A	A	B	C	?	C	A	A
CREOSOL 95%, XYLOL 5%			C	C	C	C	C	C	C	C	C	C	B	C	C	A	A	A	A	B	C	?	C	A	A
CRESTYLIC ACID (= cresol)	CH <sub>3</sub> C <sub>6</sub> H <sub>4</sub> OH	1319-77-3	C	C	C	C	C	C	C	C	C	C	C	C	C	?	?	?	A	A	B	?	A	C	A
CRUDE OIL			C	B	A	C	B	A	C	C	C	C	A	C	C	A	A	A	A	?	A	A	A	A	?
CRYOLITE 10%	Na <sub>3</sub> AlF <sub>6</sub>		B	B	A	B	A	?	?	?	?	B	A	?	?	?	?	A	?	?	?	A	?	?	?









































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