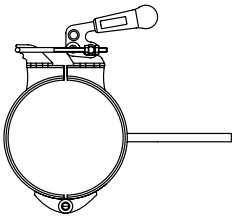
Replacement discs for manual cutters

Note	Weight [kg]	Part No
for cutter 419363	0.005	**419365**
for cutters 400738 and 419364	0.005	**400578**

Note:
Minimum order quantity – 10 pcs.

Holder for manual cutting



øD [mm]	Weight [kg]	Part No
125	3.5	**419857**
160	4.0	**400742**
200	4.5	**400743**

Note: ACO pipe holder for manual cutting should be ordered together with ACO pipe manual cutter.

Full bore flow rate tables for varying gradients

For rainwater/storm drainage applications

Flow rates based on Colebrook-White formula.
Roughness coefficient ks = 0.6 mm

Gradient	Pipe ø 40 mm		Pipe ø 50 mm		Pipe ø 75 mm		Pipe ø 110 mm		Pipe ø 125 mm	
[%]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]
10.0			2.74	1.52	8.40	2.01	23.81	2.60	33.61	2.83
7.5			2.38	1.31	7.28	1.74	20.62	2.25	29.11	2.45
5.0			1.94	1.07	5.94	1.42	16.83	1.84	23.77	2.00
4.5			1.84	1.02	5.64	1.35	15.97	1.74	22.55	1.90
4.0			1.73	0.96	5.31	1.27	15.06	1.64	21.26	1.79
3.5			1.62	0.90	4.97	1.19	14.08	1.54	19.88	1.67
3.0			1.50	0.83	4.60	1.10	13.04	1.42	18.41	1.55
2.5			1.37	0.76	4.20	1.00	11.90	1.30	16.80	1.41
2.0			1.23	0.68	3.76	0.90	10.64	1.16	15.03	1.26
1.5			1.06	0.59	3.25	0.78	9.22	1.01	13.01	1.10
1.0			0.87	0.48	2.66	0.63	7.53	0.82	10.63	0.89

Gradient	Pipe ø 160 mm		Pipe ø 200 mm		Pipe ø 250 mm		Pipe ø 315 mm	
Gradient [%]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]
10.0	64.15	3.31	116.89	3.83	218.31	4.45	401.51	5.15
7.5	55.56	2.87	101.22	3.32	188.95	3.85	347.54	4.46
5.0	45.36	2.34	82.65	2.71	154.13	3.14	283.52	3.64
4.5	43.03	2.22	78.40	2.57	146.17	2.98	268.90	3.45
4.0	40.57	2.10	73.92	2.43	137.77	2.81	253.45	3.25
3.5	37.95	1.96	69.14	2.27	128.82	2.63	236.99	3.04
3.0	35.13	1.81	64.01	2.10	119.20	2.43	219.31	2.82
2.5	32.07	1.66	58.43	1.92	108.74	2.22	200.09	2.57
2.0	28.68	1.48	52.26	1.71	97.18	1.98	178.83	2.30
1.5	24.84	1.28	45.26	1.48	84.05	1.71	154.70	1.99
1.0	20.28	1.05	36.95	1.21	68.48	1.40	126.07	1.62

Note:
The flow rates shown above assume an unrestricted discharge from the pipe. For installations without an unrestricted discharge, the flow rate will be affected
by the downstream throttle.

For shallow gradients, the Colebrook-White formula underestimates flow rates (because when gradient tends towards zero %, velocity also tends to zero).
For level or nearly level installations (slope < 1 %), spatially varied flow tables should be used.

For soil/foul water drainage applications

Flow rates based on Colebrook-White formula.
Roughness coefficient ks = 0.6 mm

Gradient	Pipe ø 40 mm		Pipe ø 50 mm		Pipe ø 75 mm		Pipe ø 110 mm		Pipe ø 125 mm	
[%]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]
10.0			2.30	1.27	7.14	1.71	20.45	2.23	28.97	2.44
7.5			1.99	1.10	6.19	1.48	17.71	1.93	25.09	2.11
5.0			1.63	0.90	5.05	1.21	14.46	1.58	20.49	1.72
4.5			1.54	0.85	4.79	1.14	13.72	1.50	19.43	1.64
4.0			1.46	0.80	4.52	1.08	12.94	1.41	18.32	1.54
3.5			1.36	0.75	4.23	1.01	12.10	1.32	17.14	1.44
3.0			1.26	0.70	3.91	0.93	11.20	1.22	15.87	1.34
2.5			1.15	0.64	3.57	0.85	10.23	1.12	14.49	1.22
2.0			1.03	0.57	3.19	0.76	9.15	1.00	12.96	1.09
1.5			0.89	0.49	2.77	0.66	7.92	0.86	11.22	0.94
1.0			0.73	0.40	2.26	0.54	6.47	0.71	9.16	0.77

Gradient	Pipe ø 160 mm		Pipe ø 200 mm		Pipe ø 250 mm		Pipe ø 315 mm	
[%]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]	Flow rate Q [l/s]	Velocity v [m/s]
10.0	55.61	2.87	101.81	3.34	206.87	4.22	382.95	4.92
7.5	48.16	2.49	88.17	2.89	177.84	3.62	329.47	4.23
5.0	39.32	2.03	71.99	2.36	143.52	2.93	266.21	3.42
4.5	37.30	1.93	68.30	2.24	135.71	2.77	251.81	3.23
4.0	35.17	1.82	64.39	2.11	127.46	2.60	236.59	3.04
3.5	32.90	1.70	60.23	1.98	118.69	2.42	220.42	2.83
3.0	30.46	1.57	55.76	1.83	109.29	2.23	203.07	2.61
2.5	27.80	1.44	50.90	1.67	99.10	2.02	184.25	2.37
2.0	24.87	1.28	45.53	1.49	87.86	1.79	163.50	2.10
1.5	21.53	1.11	39.43	1.29	75.18	1.53	140.05	1.80
1.0	17.58	0.91	32.19	1.06	60.25	1.23	112.42	1.44

Note:
The flow rates shown above assume an unrestricted discharge from the pipe. For installations without an unrestricted discharge, the flow rate will be affected
by the downstream throttle.

For shallow gradients, the Colebrook-White formula underestimates flow rates (because when gradient tends towards zero %, velocity also tends to zero).
For level or nearly level installations (slope < 1 %), spatially varied flow tables should be used.

Operating pressures

The ACO pipe socketed stainless steel pipe systems are fitted with an unique, double lip seal manufactured from either EPDM or Viton®. The double lip seal arrangement provides added security for the ultimate long term reliability. The ACO pipe; socketed stainless steel pipe systems are tested and approved for operating pressures in gravity, siphonic and vacuum systems.

ACO pipe stainless steel pipe systems are designed for maximum working pressure 0.5 bar according to EN 1124. In case where higher pressure may apply, it is necessary to combine the system with socket clamps.

Pipe diameter [mm]	**Operating pressure** [bar]	
	Without socket clamp	With socket clamp
40	0.5	2.5
50	0.5	2.5
75	0.5	2.5
110	0.5	2.5
125	0.5	2.5
160	0.5	1.5
200	0.5	1.5
250	0.5	1.0
315	0.5	0.7

Vacuum applications	
Pipe diameter [mm]	Operating pressure [bar]
40	-0.8
50	-0.8
75	-0.8
110	-0.8
125	-0.8
160	-0.8
200	-0.8
250	-0.8
315	-0.8

ACO pipe

Generally

The following standards will help designers to select the correct size of pipe system for a particular application: EN 12056: gravity drainage systems inside buildings. EN 752: drain and sewer systems outside buildings. Installation should be in accordance with the manufacturer's recommendations as well as with EN 12056–2, EN 12056–3 and EN 752.

Pipe cutting

If it is necessary to adapt or shorten pipe lengths where tools are used, the cut must be square, clean and chamfered.

Suitable cutters are available from ACO.

These tools are designed to form the edge bevel on the male spigoted end of the pipe. Carbon steel cutting wheels are not suitable.

Pipe jointing

The assembly of pipe joints is quick and straightforward requiring only a light application of lubricant available from ACO to the chamfered pipe end. Ensure that the matching ends of the pipes and fittings are clean and free from contamination. Push-fit the pipe end into the socket, but do not push fully into the socket recess so as to allow for thermal expansion within the system.

Seal Assembly

Seal assembly

The double lip seal is easily removed and replaced from the female end of all pipes and fittings. This allows the on-site upgrade of seal material from EPDM or Viton without the need for special tools.

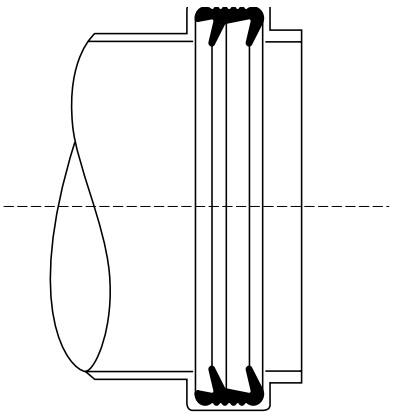
Seal installation notes

1. If changing the seal, ensure the correct size and grade of seal is selected for the application. For reference, EPDM seals are BLACK and Viton seals are GREEN. If in doubt, contact the ACO Building Drainage Helpline on 01462 816666 for assistance.

2. Ensure the seal itself and the zone around the pipe and/or fitting receiving the seal is clean, dry and free from dirt, dust or particulates.

3. Insert the dry seal into the pipe/fitting recess as shown in the diagram below. NOTE: the seal MUST be inserted so the double sealing lips face away from the opening of the pipe/fitting.

4. Do not use tools to aid the assembly process otherwise damage to the pipes, fittings and seals may occur.



Seal integrity

Providing the installation guidelines are followed and that all reasonable precautions are taken during the installation and that the system is not exposed to chemicals or conditions outside the specification for the component materials, a life expectancy of around 25 years can be reasonably expected. No guarantee on seal integrity can be offered as the ACO PIPE® components are subjected to a variety of installation and in-service operational variables beyond the control of ACO building Drainage.

Pipe weights

ACO PIPE® thin-wall stainless steel pipe systems are light in weight and high on performance with clear advantages in ease of handling and savings in labour costs over traditional metal pipe systems.

Engineers will need to know weights and loading when designing vertical stack and horizontal pipe run systems. The table gives weights for all pipe sizes empty and full of water.

Pipe diameter (mm)	Pipe weight Empty (kg/m)	Pipe weight Full (kg/m)
40	1.0	2.1
50	1.3	3.1
75	1.9	6.0
110	2.8	12.4
125	3.2	15.1
160	5.1	24.6
200	7.7	38.2
250	9.6	57.5
315	16.4	92.4

Socket clamps

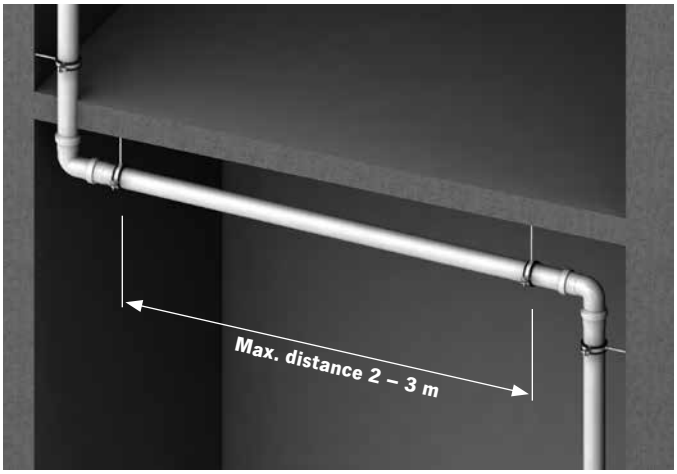
Drainage systems for soil, waste water and rainwater in above-ground installations are gravity systems with free drainage and should not be overloaded/clogged. the ACO PIPE® socketed systems have push-fit socket joints and consequently will not be able to resist internal pressure unless precautions are taken to ensure that the joints will not slide apart.

appropriate fixing to the building can prevent the joints from sliding apart in most cases, but if it is difficult or impossible to fix the pipes to the building, the socket clamps (Part No. 419134-7 - see page 37) can prevent the push-fit sockets and spigot ends from sliding apart if the system is overloaded or internal pressure is generated.

Horizontal pipe runs

Horizontal pipework should be supported by pipe brackets in 3 meter intervals maximum. One bracket should be within 300 mm of the pipe joint and the other approximately at the midpoint of the pipe length, but not more than 3 metres from the next bracket (depending on the pipe diameter- refer to the table below).

Additional brackets should be used at changes of direction and at junction points immediately downstream of the fitting. Horizontal pipe runs may be installed at a fall of 1 in 50 and feeder connections should be achieved using 45° branches. Where long pipe runs occur i.e. greater than 15 meters, a fixing arm should be attached to the bracket to prevent pendulum movement within the system.



As a guide, use the table below for bracket spacing on horizontal pipes.

Pipe diameter bracket spacing

Pipe ø [mm]	Length [m]
40	2.0
50	2.0
75	2.3
110	2.5
125	3.0
200	3.0
250	3.0

Vertical pipe stacks

The load applied with a fluid in the pipe is vertically down. Position the highest bracket adjacent to the top inlet of the pipe, then mount brackets at 3 meter spacings At the bottom of the vertical pipe, use a bracket within 200mm of the bottom. Fit brackets at each change of pipework is direction of junction points. Pipework should be at least 30mm from the wall to fascilitate maintenance and painting.

Pipe weights
Engineers should be aware of minimum and maximum weights when designing vertical stack and horizontal pipe run systems. Generally, when the pipe is completely full of water, then the vertical deflection should not exceed 1.5mm. The discretion of the installer should be applied in each instance to ensure that the pipe is adequately supported.

Below ground installation

Back-filling
Back-filling around the pipe can only start when the position of the pipe has been checked and approved.

Compression
Care should be taken to avoid distortion of both the pipe run and the pipe itself during back-filling and compaction. Avoid tipping backfill material directly onto the pipe system. If mechanical compaction is used, the weight and resultant compressive force must be taken into account to avoid distortion. Back-fill materials should be compacted to a minimum of 93%.

Filling in the excavation
Soil from the excavation can be used for filling, but larger stones and blocks should not be used. Compression of the filling material outside reinforced areas is not necessary if the settling will not cause problems or damage.

Local standards
It is recommended to install pipes according to local standards.

ACO PIPE® material information

Pipe material information

Thermal movement

ACO PIPE® stainless steel pipework systems have a low coefficient of thermal expansion, of approximately 1 in 1000mm per 60°C of temperature change.

The requirement for thermal tolerance on pipe systems is otherwise confined to hot water conditions. A comparison of approximate thermal movement between different pipe materials in mm per metre with a temperature change of 60°C is given below.

- Aluminium alloy 1.44mm
- Copper 0.98mm
- Grey cast iron 0.75mm
- HDPE 9.0mm
- PVCu 3.0mm
- Stainless steel 0.99mm

Coefficients of linear expansion (α) for various materials are as follows:

Material	Coeficient of linear expansion (10-6K-1)
HDPE	150.0
PVCu	50.0
Aluminium	24.0
Stainless steel	16.5
Copper	16.4
Grey cast iron	12.5

Sealing material information

EPDM
(ethylene propylene diene monomer)
Black sealing rubber ring, which is suitable for most applications where there are no oil or petrol residues in the waste water.

NBR
(acryl nitrile-butadiene rubber)
Black sealing rubber ring which is suitable for waste water applications where there are petrol or oil residues. NBR is not resistant to solvents and high temperatures.

FPM
(fluoroelastomer) – Viton®
Green sealing rubber ring which is suitable for special applications where oil, solvents and strong acids are present in waste water; and for applications with higher temperatures. Viton® seal has limited resistance to chemicals like acetone, methyl alcohol.

TPEV
(thermoplastic elastomer vulkanized)
Sealing rubber with excellent heat resistance, physical and mechanical properties. Suitable for pharmaceutical, medical, food and beverage applications. TPEV has limited resistance in oil or petrol residues in waste water.

Rubber type	Sealing materials			
	EPDM	NBR	FPM (Viton®)	TPEV
Colour	black	black	green	red
Temperature range	-50 / +130 / +150 °C	-30 / +80 / +100 °C	-20 / +200 / +300 °C	-35 / +120 / +140 °C
Resistance				
Water	excellent	good	good	excellent
Chemicals				
Acids	good	fair	excellent	good
Bases	good	fair	excellent	excellent
Benzene/Petrol	unsatisfied	excellent	excellent	limited
Oils				
ASTM Oil No. 1	unsatisfied	excellent	excellent	limited
ASTM Oil No. 3	unsatisfied	excellent	excellent	limited
Ozone & weather stresses	good	limited	good	good

To be sure of suitability for special applications please consult exact seal material features within ACO installation guide.

Care and maintenance

Maintenance programme
With care taken during the fabrication and installation, cleaning before handing over to the client should present no special problems, although more attention than normal may be required if the installation period has been prolonged.

Where surface contamination is suspected, immediate attention to cleaning after site fixing will encourage a trouble-free product.

Food and beverage handling, pharmaceutical and chemical industry applications require extremely high levels of cleanliness applicable to each industry.

Advice is often sought concerning the frequency of cleaning stainless steel and the answer is quite simple - clean the metal whenever it becomes dirty in order to restore its original appearance. This may vary from one to four times per year for external applications or it may be once per day for products installed in hygienic or chemically aggressive applications.

Frequency and cost of cleaning is lower with stainless steel than with many other materials and will often outweigh the initial higher cost of this superior product.

Stainless steel is easy to clean. Washing with soap or mild detergent in warm water followed by a clear water rinse is usually quite adequate for many industrial applications. An enhanced aesthetic appearance will be achieved if the cleaned surface is finally wiped dry.

Precautions
Acids should ONLY be used for on-site cleaning when all other methods have been proved unsatisfactory and in accordance with manufacturers' instructions. Appropriate personal protection equipment should be used at all times.

Care should be taken to ensure that acid cleaners do not spill over adjacent areas. Solvents should not be used in confined areas without adequate ventilation and only in accordance with manufacturers' instructions.

Conclusion
If all the cleaning suggestions and actions in the table below have been attempted and the surface is still not satisfactory, stainless steel can be mechanically cleaned or electropolished by specialists on site. For further information, contact the ACO Building Drainage Helpline on 01462 816666 for help and assistance.

Problem	Cleaning Agent	Comments
Routine cleaning.	Soap or mild detergent (e.g. washing up liquid) and water.	Sponge, rinse with clean water. Wipe dry if necessary.
Fingerprints.	Soap and warm water or organic solvent (e.g. alcohol, acetone).	Rinse with clean water, wipe dry if necessary.
Stubborn stains and discolouration.	Mild cleaning solutions (e.g. Cif, GODDARD'S STAINLESS STEEL CARE).	Rinse well with clean water and wipe dry.
Oil and grease marks.	Organic solvent (e.g. alcohol, acetone).	Clean after with soap and water, rinse with clean water and dry.
Rust and other corrosion products.	Oxalic acid. The cleaning solution should be applied with a swab and allowed to stand for 15-20 minutes before being washed away with clean water. May continue using Cif to give final clean.	Rinse will with clean water. Precautions for acid cleaners must be observed.

Note: Always read instructions on proprietry cleaning agents

Care and maintenance

The resistance information contained within this table is indicative only.

All data is based on reactions noted at an ambient temperature of 20˚C. Higher temperatures will generally reduce the corrosion resistance of the materials.

Please contact ACO if guarantees are required Legend of specific material suitability.

We shall arrange for tests to be undertaken with the reagent to establish the chemical resistance of the materials.

Legend

✓ Reccomend.
? Suitable.
However, contact ACO for further advice,
✕ Not reccomended.
~ No data available

Reagent	Stainless Steel 304	Stainless Steel 316	EPDM	Viton
Acetic Acid 20%	✓	✓	✓	✓
Acetic Acid 80%	✓	✓	✓	✓
Acetone	✓	✓	✓	✕
Alcohol (Methy or Ethyl)	✓	✓	✓	?
Aluminium Chloride	?	?	✓	✓
Aluminium Sulphate	✓	✓	✓	✓
Ammonia Gas (Dry)	✓	✓	~	~
Ammonium wChloride	?	?	✓	✓
Ammonium Hydroxide	✓	✓	✓	✓
Ammonium Nitrate	✓	✓	✓	✓
Ammonium Phosphate	✓	✓	✓	✓
Ammonium Sulphate	?	✓	✓	✓
Ammonium Sulphide	✓	✓	~	~
Amyl Chloride	✓	✓	✕	?
Aniline	✓	✓	?	✓
Barium Chloride	✓	✓	✓	✓
Barium Hydroxide 10%	~	~	✓	✓
Barium Sulphate	✓	✓	✓	✓
Barium Sulphide	~	~	✓	✓
Beer	✓	✓	✓	✓
Beet Sugar Liquors	✓	✓	✓	✓
Benzene	✓	✓	✕	✓
Benzoic Acid	✓	✓	✕	✓
Bleach - 12.5% Active C1	~	~	✓	✕
Boric Acid	✓	✓	✓	✓
Bromic Acid	?	?	~	~
Bromine Water	✕	✕	~	~
Butane	✓	✓	✕	✓
Calcium Carbonate	✓	✓	✓	✓
Calcium Chloride	✕	?	✓	✓
Calcium Hydroxide	?	✓	✓	✓
Calcium Hypochlorite	✕	?	?	✓
Calcium Sulphate	✓	✓	✓	✓
Cane Sugar Liquors	~	~	✓	✓
Carbonic Acid	~	~	✓	✓
Carbon Bisulphide	✓	✓	✕	✓
Carbon Dioxide	✓	✓	✓	✓
Carbon Monoxide	✓	✓	✓	✓
Carbon Tetrachloride	?	?	✕	✓

Reagent	Stainless Steel 304	Stainless Steel 316	EPDM	Viton
Caustic Potash	✓	✓	✓	✓
Caustic Soda 20%	✓	✓	✓	✓
Caustic Soda 50%	✓	✓	✓	✓
Caustic Soda 80%	✓	✓	✓	✓
Chlorine (Dry)	?	?	✓	✓
Chlorine (Wet)	✕	✕	✕	✓
Chloraocetic Acid	?	✓	?	✕
Chlorobenzene	✓	✓	✕	✓
Chloroform	?	?	✕	✓
Chromic Acid 50%	✕	✕	?	✓
Chromic Acid 10%	✓	✓	✕	?
Citric Acid	?	✓	✓	✓
Copper Chloride	✕	✕	✓	✓
Copper Cyanide	✓	✓	✓	✓
Copper Nitrate	✓	✓	~	✓
Copper Sulphate	✓	✓	✓	✓
Cottonseed Oil	~	~	✕	✓
Cresol	~	~	✕	✕
Cyclohexanone	?	✓	✕	✕
Cyclohexane	✓	✓	✕	✓
Diethylamine	?	?	?	✕
Disodium Phosphate	~	~	✓	✓
Distilled Water	✓	✓	✓	✓
Ethyl Acetate	✓	✓	?	✕
Ethylene Chloride	✓	✓	✕	?
Ethylene Glycol	✓	✓	✓	✓
Fatty acids (Cb)	✓	✓	✕	✓
Ferric Sulphate	✓	✓	✓	✓
Fluorene Gas (Wet)	✕	✕	✓	?
Formaldehyde 37%	✓	✓	✓	✓
Formic Acid 90%	✕	✓	✓	?
Freon 12	✓	✓	✓	✓
Fruit Juices & Pulp	?	✓	~	✓
Furfural	✓	✓	✕	✕
Gasoline (Refined)	✓	✓	✕	✓
Glucose	✓	✓	✓	✓
Glycerine	✓	✓	✓	✓

Care and maintenance

Reagent	Stainless Steel 304	Stainless Steel 316	EPDM	Viton
Hydrobromic Acid 20%	✗	✗	✓	✓
Hydrochloric Acid 40%	✗	✗	✗	✓
Hydrocyanic Acid	✓	✓	?	✓
Hydrogen Peroxide 90%	✓	✓	✗	✓
Hydroquinone	~	~	✗	✓
Hypochlorous Acid (Chlorine Water)	~	~	✓	✓
Iodine	✗	?	?	✓
Kerosene	✓	✓	✗	✓
Lactic Acid 25%	✓	✓	✓	✓
Linseed Oil	✓	✓	✗	✓
Magnesium Chloride	?	?	✓	✓
Magnesium Sulphate	✓	✓	✓	✓
Maleic Acid	?	?	✗	✓
Methyl Chloride	?	?	✗	✗
Methyl Ethyl Ketone	~	~	✓	✗
Milk	✓	✓	✓	✓
Minerals Oils	~	~	✗	✓
Nickel Chloride	?	?	✓	✓
Nickel Sulphate	✓	✓	✓	✓
Oils and Fats	✓	✓	✗	✓
Oleic Acid	✓	✓	✓	✓
Oleum	~	~	✗	✓
Oxalic Acid	?	?	✓	✓
Palmitic Acid 10%	~	~	✓	✓
Perchloric Acid 10%	✗	✗	?	✓
Perchloric Acid 70%	✗	✗	?	✓
Petroleum Oils	✓	✓	✗	✓
Phenol 5%	✓	✓	?	✓
Phosphorous Trichloride	✓	✓	✓	✓
Photographic Solutions	?	?	✓	✓
Picric Acid	✓	✓	✓	✓
Plating Solutions	~	~	~	✓
Potassium Carbonate	✓	✓	✓	✓
Potassium Chloride	✓	✓	✓	✓
Potassium Cyanide	✓	✓	✓	✓
Potassium Dichromate	✓	✓	✓	✓
Potassium Hydroxide	✓	✓	✓	✓
Potassum Permanganate	✓	✓	✓	✓
Potassium Sulphate	✓	✓	✓	✓
Propane Gas	~	~	~	✓
Propyl Alcohol	~	~	✓	✓
Sea Water (Natural)	✗	?	✓	✓
Silver Nitrate	✓	✓	✓	✓

Reagent	Stainless Steel 304	Stainless Steel 316	EPDM	Viton
Silver Sulphate	✓	✓	✓	✗
Sodium Bicarbonate	✓	✓	✓	✓
Sodium Bisulphite	✓	✓	✓	✗
Sodium Carbonate	✓	✓	✓	✓
Sodium Cyanide	✓	✓	✓	✓
Sodium Ferrocyanide	~	~	?	✓
Sodium Hydroxide	✓	✓	✓	✓
Sodium Hypochlorite	?	✓	?	✓
Sodium Sulphate	✓	✓	✓	✓
Sodium Sulphide	?	✓	✓	✓
Sodium Sulphite	?	✓	✓	✓
Sodium Thiosulphate	✓	✓	✓	✓
Stannous Chloride	?	?	✗	✓
Stearic Acid	✓	✓	?	✓
Sulphurous Acid	?	✓	?	✓
Sulphur	?	✓	~	✓
Sulphur Dioxide (Dry)	?	✓	✓	✓
Sulphur Dioxide (Wet)	?	✓	✓	✓
Sulphuric Acid 50%	✗	✗	?	✓
Sulphuric Acid 70%	✗	✗	?	✓
Sulphuric Acid 93%	✗	✗	?	✓
Tannic Acid	✓	✓	✓	✓
Tanning Liquors	✓	✓	✓	✓
Tartaric Acid	~	~	?	✓
Toluene	~	~	✗	✗
Trichloroethylene	✓	✓	✗	✗
Triethylamine	✓	✓	✓	✗
Trisodium Phosphate	~	~	✓	✓
Turpentine	✓	✓	✗	✓
Urea	✓	✓	✓	✓
Urine	✓	✓	✓	✓
Vinegar	✓	✓	✓	✓
Water (Fresh)	✓	✓	✓	✓
Water (Mine-acid)	✓	✓	✓	✓
Water (Salt)	~	~	✓	✓
Whisky	✓	✓	✓	✓
Wines	✓	✓	✓	✓
Xylene	~	~	✓	✓
Zinc Chloride	✗	✗	✓	✓
Zinc Sulphate	?	✓	✓	✓