1120 WESTCHESTER AVENUE NYSDEC SITE No. 203083

1120 WESTCHESTER AVENUE BRONX, NEW YORK 10459 Block 2750 Lot 11

Soil Vapor Extraction Operation and Maintenance Plan

Prepared for:

West Levy, LLC 2140 East 7th Street Brooklyn, New York 11230

Prepared By:



SYSTEM OPERATION AND MAINTENANCE

SVE Start-Up Procedures

Following installation of the system, the following items will be inspected and tested to ensure proper operation:

- 1) Check all exposed/visible SVE piping for evidence of damage, cracks, or leaks.
- 2) Turn system on and off to ensure the start box is functioning properly;
- 3) Record vacuum reading at blower;
- 4) Record vacuum readings at surrounding vapor monitoring points;
- 5) Take PID readings before, in-between and after carbon vessels.

The results of the initial start-up test, or any subsequent pressure test will be provided to the DEC

and DOH for review and approval, and to determine whether a second extraction pit would be

needed at the back of the building.

The system testing described above will be conducted if, in the course of the SVE system lifetime, the system goes down or significant changes are made to the system and the system must be restarted.

A visual inspection of the complete system will be conducted during each monitoring event. SVE system components to be monitored include, but are not limited to, the following:

- Vacuum blower; and,
- General system piping.
- Vacuum gauges at blower.
- Control switches.
- PID Readings from influent line, between carbon drums and at the discharge stack.

Observations and PID readings will recorded on the inspection form (**Attachment 1**). The SVE system is not adjustable and the regenerative blower shall not be serviced or repaired at the Site.

Monitoring and Sampling

Confirmation Testing

Confirmation indoor air testing will be completed after the SVE system has been in continuous operation for a minimum of 30 days. Testing will be performed during the heating season (November1 -March 1) and will include one indoor air sample from the cellar, one indoor air sample from the first floor and one indoor air sample from the second floor. Samples will be collected in 6-liter summa cannisters over an 8 hr period and submitted to a NYSDOH Certified laboratory for the analysis of VOCs by TO15.

Performance Monitoring

The system will be monitored initially on an alternate week basis for the first month of operation, going to monthly for next three months of operation and then quarterly after that. Air samples will be collected at start up and then on a quarterly basis to evaluate the performance of the system. PID readings will be taken during each monitoring event from three locations: system influent (before carbon), between the carbon canisters and from the system discharge (after carbon). Air samples will be collected from the system effluent only and submitted to a NYSDOH certified environmental laboratory for analysis of VOCs by USEPA method TO15.

Initial effluent concentrations will be high as accumulated vapors are removed resulting in accelerated carbon depletion rates. However carbon usage will rapidly diminish over time (1-2 weeks) as the accumulated vapors are removed and effluent concentration is dictacted by the transfer of VOCs from the sorbed phase to the vapor phase from residually impacted soils. Carbon drums will be set up in series with the between vessel PID readings utilized to determine when break through occurs at the first drum. When this occurs the drum will be changed out and shipped back to the supplier for regeneration. If nuisance odors are observed from the discharge at any time, operation of the system will be temporarily halted until the situation is remedied by changing out the carbon or through other necessary repairs / actions (loose valve / fitting, broken pipe, etc.).

QA/QC

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site. Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
- Sample Tracking and Custody;
- Calibration Procedures:
 - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
 - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;

- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel.

Reporting

Sample analysis will be provided by a New York State ELAP certified environmental laboratory. Laboratory reports will include Analytical Systems Protocol July 2005 (ASP) category B data deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared subsequent to each quarterly air sampling event. The report (or letter) will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (o be submitted electronically in the NYSDEC-identified format);
- Calculations of contaminant mass recovered, treated, or destroyed by the system during the period of operation;
- Description of system performance in terms of contaminant data and comparison to the design performance standards;
- Any observations, conclusions, or recommendations; and
- A determination as to whether conditions have changed since the last reporting event.

Reporting of Performance Data in CCR

Chemical labs used for all performance monitoring and sampling analysis will be NYSDOH ELAP laboratory certified in the appropriate categories. The CCR will provide a tabular and map summary of all performance monitoring and post-remedial sample results.

Permits / Authorization

Air discharge under the NYS Class 2 Hazardous Waste Site program will not require a permit from the NYSDEC, however sites undergoing remediation in NYSDEC's DER program are not exempt from air permitting requirements. An industrial process equipment application will be filed with the NYC Department of Environmental Protection, Bureau of Environmental Compliance, if required.

<u>Attachment 1</u> SVE System Inspection Checklist

SOIL VAPOR EXTRACTION SYSTEM INSPECTION FORM

Date:		
Time:		
Weather:		

Inspector: _____

Extraction Point	Vacuum (iwc)	PID Reading(ppb)
VE-1		
Blower inlet		
Before Carbon		
After Carbon		

Inspection:	Yes / No	Comments
Blower Operating?		
Spare Carbon Drums?		
System Integrity?		

CARBON MONITORING

Carbon filter installation date:

Date/Time	Location	PID reading	PID units(ppm or ppb)
	Pre-Carbon		
	Post -Carbon		

Comments/Actions taken:

<u>Attachment 2</u> Manufacturers Specification Sheets

Environmental / Chemical Processing Blowers

EN 454 & CP 454

1.5 HP Sealed Regenerative w/Explosion-Proof Motor

FEATURES

- Manufactured in the USA ISO 9001 and NAFTA compliant
- Maximum flow: 120 SCFM
- Maximum pressure: 65 IWG
- Maximum vacuum: 59 IWG
- Standard motor: 1.5 HP, explosion-proof
- Cast aluminum blower housing, impeller , cover & manifold; cast iron flanges (threaded); teflon[®] lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS

- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

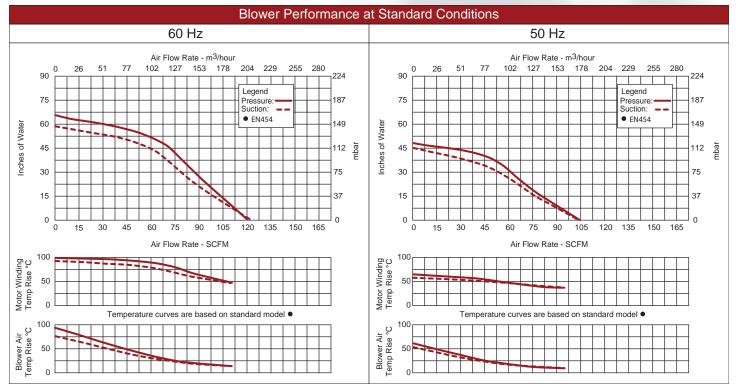
BLOWER OPTIONS

- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

ACCESSORIES

- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges, & relief valves
- Switches air flow, pressure, vacuum, or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package





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AMETEK TECHNICAL & INDUSTRIAL PRODUCTS 75 North Street, Saugerties, NY 12477 USA: +1 215-256-6601 - Europe: +44 (0) 845 366 9664 - Asia: +86 21 5763 1258 Customer Service Fax: +1 215.256.1338 www.ametektip.com





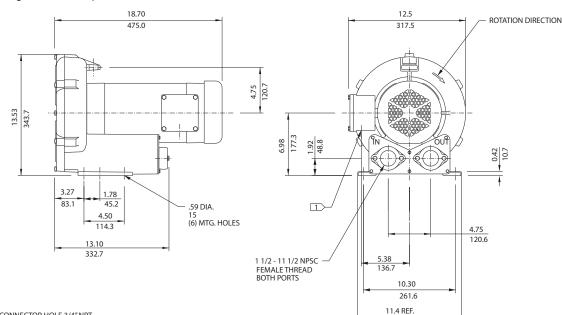
ROTRON[®]

Environmental / Chemical Processing Blowers

ROTRON[®]

EN 454 & CP 454

1.5 HP Sealed Regenerative w/Explosion-Proof Motor



TERMINAL BOX CONNECTOR HOLE 3/4" NPT.
 DRAWING NOT TO SCALE, CONTACT FACTORY FOR SCALE CAD DRAWING.

 $\frac{IN}{MM}$

NOTES

2 DRAWING NOT TO SCALE, CONTACT FACTORY FOR SCALE CAD DRA
 3 CONTACT FACTORY FOR BLOWER MODEL LENGTHS NOT SHOWN.

			Part/ Mod	el Number	
		EN454W58ML	EN454W72ML	CP454W72MLR	CP454FR72MLR
Specification	Units	080487	080488	080490	080494
Motor Enclosure - Shaft Mtl.	-	Explosion-proof-CS	Explosion-proof-CS	Chem XP-CS	Chem XP-SS
Horsepower	-	1.5	1.5	1.5	1.5
Phase - Frequency	-	Single-60 hz	Three-60 hz	Three-60 hz	Three-60 hz
Voltage	AC	115/208-230	230/460	230/460	230/460
Notor Nameplate Amps	Amps (A)	15/7.9-7.5	4.6/2.3	4.5/2.3	4.6/2.3
Max. Blower Amps	Amps (A)	19/10.9-9.5	5.6/2.8	5.6/2.8	5.6/2.8
nrush Amps	Amps (A)	96-48	32/16	32/16	32/16
Service Factor	-	1.0	1.0	1.0	1.0
Starter Size	-	1/0	00/00	00/00	00/00
Thermal Protection	-	Class B - Pilot Duty			
(P Motor Class - Group	-	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G
Shinning Weight	Lbs	90	84	84	84
Shipping Weight	Kg	40.8	38.1	38.1	38.1

289.6

Voltage - ROTRON motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: 208-230/415-460 VAC-3 ph-60 Hz and 190-208/380-415 VAC-3 ph-50 Hz. Our dual voltage 1 phase motors are factory tested and certified to operate on both: 104-115/208-230 VAC-1 ph-60 Hz and 100-110/200-220 VAC-1 ph-50 Hz. All voltages above can handle a ±10% voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

Operating Temperatures - Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

Maximum Blower Amps - Corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

XP Motor Class - Group - See Explosive Atmosphere Classification Chart in Section I

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ROTRON®

Motor Options

ROTRON strives to provide the most complete variety of desired options on our products including on our motors. By using motor vendors of high quality and versatility, we can provide motor features from multiple released designs to meet your needs (i.e., a Chem Processing Inverter Duty Explosion-proof motor with space heaters and drains wound for 380 V-50 Hz service).

Design Consistency

ROTRON motors are engineered for us to integrally mount with our blower and maximize blower performance. Our vendors are qualified by ROTRON (per motor part number) to ensure the blowers' mechanical and electrical needs merge with your required features. The basic motor requirements on our DR/EN/CP/HiE products include:

- NEMA approved
- CE conformity (non-XP models)
- UL & CSA approved with symbol and file on nameplate
- C-face mount
- Permanently sealed bearings
- Shaft end play, run out and perpendicularity requirements above NEMA standards
- Dual voltage and dual frequency (some models not feasible) to maximize use worldwide
- Single Shafted Totally Enclosed Fan Cooled (TEFC) and Explosion-proof (XP) models
- Double Shafted Open Drip Proof (ODP) models with dual internal fans for circulation
- Class I Group D minimum on explosion-proof motors; many are Class I Group D, Class II F & G
- Commercial Spa (SPA-ODP) motors with automatic thermal overload protection and industry specified terminal strip

Standard Motor Variations

Chemical Processing (CP) features are added to TEFC, XP or HiE designs for corrosive gas service, Marine Duty service and sanitary (food/pharmaceutical) service.

- 303 stainless steel shaft
- Cast iron and steel frame epoxy painted or zinc plated
- Zinc plated hardware
- Stainless steel nameplate
- Non-hygroscopic insulation; double dipped and baked stator
- Epoxy coating on rotor
- · Gaskets and joint sealers on all metal-to-metal surfaces
- Oversized conduit box

High Efficiency (HiE) features are added to TEFC, ODP, XP or CP motors for maximum motor efficiency and life. ROTRON HiE motors carry extra phase-to-phase protection for use with inverters between a 1750-3500 RPM range.

Inverter Duty features are added to TEFC, ODP, XP or CP for use with Inverters/Variable Speed Drive Controllers. A wide range of RPM can be handled and should be specified at time of quote. For best compatibility, an inverter should be matched to the motor manufacturers design.

Project Specific Motor Variations

There are no limits to the options you can select or request for your product. Routine motor options include:

- International voltage & frequency (Hz)
- Different shaft material
- Oversized and/or Nema 4 intent T-box
- Space heaters
- Drains
- Regreasable bearings
- Tropicalized windings



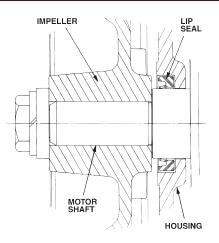


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Typical Sealing Options

Lo-Leak[™] LIP SEAL Option

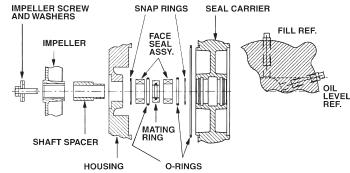
The Lo-Leak[™]Lip Seal option is available to control gas leakage for all DR models and is standard on all EN and CP models. Features include: Lip seals to prevent leakage at the motor shaft. RTV sealing compound is used to cut off all leakage paths at the blower's metal-to-metal surfaces. Castings are vacuum impregnated to prevent leakage through castings. Estimate leakage rate = 25 cc/min or less



Double Face Carbon Seal Option

For further minimization of gas leakage on all DR, EN and CP models, a pair of face seals work against each other on opposite sides of a common mating ring to effectively reduce gas leakage at the motor shaft. The face shields are continually lubricated from a reservoir to prolong seal life. The seal is completed by installing the blower to motor bolts with O-rings and sealing the covers to the housing with an RTV sealing compound. O-rings are also placed between the pipe flanges and the manifold.

All castings are vacuum impregnated. Estimate leakage rate = 0.5 cc/min or less



Hermetically Sealed Spiral Containment Option

The containment option utilizes a series of O-rings to control gas leakage in Spiral blower models. The O-rings are placed at critical locations on the blower's housing and covers to contain gas leakage.

Hermetically Sealed Mag Drive Option

On DR, EN and CP 101 units, a magnet drive option has been an alternative for complete gas containment. O-rings are used throughout the product, and magnets attached to the motor shaft spin magnets inside the blower without shaft penetration. Estimated leakage rate = 0.001 cc/mi

Nitrogen Purge / Blanket Option

The nitrogen purge option is a carrier designed to accept a nitrogen line which will purge the space outside the shaft hole. Purges can be designed to bleed the nitrogen into the process called a blanket, or the carrier can have a second tap to carry away the leaking contaminants.

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Chem-Tough™ Chemical Resistance

To stand up in corrosive and hazardous environments, chemical processing blowers have to be tough. That's why Ametek ROTRON routinely applies Chem-Tough[™], ROTRON'S own engineered and proprietary process, whenever it builds blowers for handling chemical (vapor) streams. Chem-Tough[™] combines the advantages of aluminum oxide ceramic and selected fluorocarbons to give ROTRON blowers unheard-of levels of chemical resistance, hardness, abrasion resistance, permanent lubricity and more.

Chem-Tough™ Brings You the Rotron Advantage

Through this unique proprietary process, Chem-Tough[™] gives ROTRON blowers these advantages:

Outstanding Chemical Resistance

Time after time, Chem-Tough™ finishing shows extremely high resistance to most common chemicals, as well as dramatically improved corrosion resistance over regular hard anodizing. Chem-Tough™ allows aluminum to achieve equivalent corrosion resistance as teflon[®]. 90-day immersion in acid or alkaline solution (pH 4.0-8.5) has no effect; neither does prolonged exposure to salt water. Far exceeds military specification requirements for salt spray.

Abrasion Resistance Equivalent to Steel

Excellent for smooth surfaces, Chem-Tough[™] surface conversion provides higher wear resistance than either case-hardened steel or hard-chrome plate. Rub any other metal against the Chem-Tough[™] finish, and the metal will show nothing but the slightest wear. Chem-Tough[™] provides a perfect bond to the parent metal.

Increased Hardness

With an equivalent hardness of Rc 40-60, Chem-Tough™ is approximately file-hard – the hardness of nitrated steel. Because the Chem-Tough™ surface becomes an integral part of the metal, it simply cannot peel or chip – neither can it be scratched, flaked or nicked under ordinary conditions.

Permanent Dry Lubricity

By infusing polymers into aluminum, Chem-Tough™ gives the resulting surface a high degree of permanent lubricity and resistance to moisture. The polymers also level off surface asperities, significantly reducing surface tension. The result: blowers converted with Chem-Tough™ have a longer life, operate more efficiently and call for less maintenance.

Other Proprietary Processes

Food-Tough[™] uses the same unique process as Chem-Tough[™], and is designed for the food processing, medical and pharmaceutical markets. Food-Tough[™] has USDA approval and meets FDA guidelines.

Chem-Tough[™] at Work

Chem-Tough[™] employs the advantages of anodizing, hardcoat plating, low-friction polymers and dry lubricants to become an integral part of the blower's molecular structure.

Specifically, Chem-Tough[™] first converts the aluminum surface to aluminum oxide, forming a new ceramic-like surface. The water in the ceramic is replaced with Teflon[®], adding a multifunctional dimension to the surface; in the process, the aluminum crystals expand and form anchor crystals that remain hygroscopic for a short time. Then, under controlled conditions, particles of the specified polymer are infused to interlock with these anchor crystals. The new surface extends .5 mil above and below the original aluminum surface – and forms a permanent molecular bond with the metal.

The result: a plastic/ceramic surface that's harder than steel, is continuously lubricating, and resists damage from chemicals like no other. The kind of protection you need for your chemical processing blowers.





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Chemical Resistance Chart

Chemical Resistance Chart		1					-		
Chemical Effect Ratings				6					
A – No effect – acceptable				lol	<u>_</u>	<u>_</u>	<u>–</u>	<u>م</u>	
B – Minor effect – acceptable				Tef	Ste	Ste	Ste	Ste	
C – Moderate effect – questionable			<u>e</u>	h (SS	SS	SS	SS	
D – Severe effect – not recommended	Ę	۲	Ste	ono	in e	ine l	in le	inle	Š
* – Not tested	j.	Iro	on	۲ <u>۲</u>	Stai	Stai	Stai	Stai	ello
Chemical	Aluminum	Cast Iron	Carbon Steel	Chem-Tough (Teflon [®])	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Hastelloy C
Chemical	A	Ű	Ű	σ	Э Э	Э Э	'n	4	T
Acetaldehyde	В	*	С	А	Α	Α	Α	*	Α
Acetate Solv.	В	В	Α	А	Α	В	Α	В	*
Acetic Acid	В	D	С	Α	*	В	Α	В	Α
Acetic Anhydride	В	В	D	Α	В	Α	A	В	Α
Acetone	A	A	A	A	A	A	A	В	A
Acetylene	A	A	A	*	A	A	A	A	*
Acrylonitrile	В	C	*	*	A	A	C	*	В
Alcohols	-				~	~	-		
Amyl	с	с	с	Α	A	Α	Α	*	А
BENZYL	В	*	*	*	*	A	A	*	A
	B	C	C	A	A	A	A	*	A
Butyl	-	د *	-	A *	A *			*	
Diacetone	A		A	*	*	A	A		A
Ethyl	В	A	Α	-		A	A	Α	A
Hexyl	Α	*	Α	*	*	Α	Α	*	Α
Isobutyl	В	*	Α	*	*	Α	Α	*	Α
Isopropyl	В	С	Α	*	*	Α	Α	*	Α
Methyl	В	А	Α	А	*	Α	Α	А	Α
Octyl	Α	*	Α	*	*	Α	Α	*	Α
Propyl	А	*	Α	А	*	Α	Α	*	Α
Aluminum Chloride 20%	В	D	А	*	*	D	С	D	Α
Aluminum Chloride	D	D	В	А	С	D	С	*	Α
Aluminum Hydroxide	А	D	Α	А	*	Α	Α	А	*
Alum Potassium									
Sulfate (Alum), 10%	Α	D	Α	Α	*	Α	*	*	В
Alum Potassium									
Sulfate (Alum), 100%	В	*	Α	Α	*	D	Α	В	В
Aluminum Sulfate	Α	D	Α	Α	*	С	С	А	Α
Amines	Α	Α	В	Α	Α	A	A	*	Α
Ammonia 10%	*	*	*	A	*	*	Α	*	Α
Ammonia, Anhydrous	В	D	В	A	A	В	A	Α	A
Ammonia, Liquids	D	A	A	A	*	A	A	A	B
Ammonia, Nitrate	C	*	A	*	*	A	A	A	*
Ammonium Bifluoride	D	*	*	*	*	C	A	*	В
Ammonium Carbonate	c	С	В	A	В	A	A	Α	B
Ammonium Chloride	C	D	D	A	C	A	C	A	A
	c	A	C	A	A	A	A	A	A
Ammonium Hydroxide	-		-						
Ammonium Nitrate	B	A	D	A	A *	A	A	A	A
Ammonium Persulfate	C	D	A	A		A	A	A	A
Ammonium Phosphate, Dibasic	В	*	D	Α	В	Α	Α	Α	A
Ammonium Phosphate, Monobasic	В	*	Α	Α	*	A	A	Α	Α
Ammonium Phosphate, Tribasic	В	С	D	Α	В	Α	Α	А	Α
Ammonium Sulfate	В	С	С	А	C	Α	В	А	Α
Amyl-Acetate	В	*	С	А	В	Α	А	С	Α
Amyl Alcohol	В	*	Α	А	*	Α	А	*	A
Amyl Chloride	D	*	Α	А	*	С	В	*	Α
Aniline	С	*	С	А	В	А	А	А	В
Anti-Freeze	А	В	С	А	*	Α	Α	*	А
Antimony Trichloride	D	*	*	А	*	D	D	*	Α
Aromatic Hydrocarbons	А	Α	Α	*	*	*	Α	*	*
Arsenic Acid	D	D	D	Α	В	Α	Α	*	*
									1

Barium Carbonate B B B A A A A Barium Chloride D D C A B A A A Barium Mydroxide D C C A B A A A Barium Sulfate D C C A B A	Chemical	Aluminum	Cast Iron	Carbon Steel	Chem-Tough (Teflon [®])	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Hastelloy C
Barium HydroxideDCCAABBarium SulfateDCCABAAABarium SulfideDCCABAAAABenzaldehydeBBAAAAAAABenzaldehydeBBCABAAAAABenzoic AcidBD*ABAAAAABorax (Sodium Borate)CACAAAAAABoric AcidBD*ABAAAAAButaneACCAAAAAAAButaneACCAAAAAAButyleneAAAAAAAAAButylc AcidBD*ACCAAACalcium BisulfateCC*AAAAACalcium GhorideCC*ABAAACalcium HydroxideC*ABAAACalcium GhorideC*ABAAACalcium BisulfiteC*ABAAACalcium HydroxideC*A <td>Barium Carbonate</td> <td>В</td> <td>В</td> <td>В</td> <td>Α</td> <td>В</td> <td>Α</td> <td>Α</td> <td>Α</td> <td>Α</td>	Barium Carbonate	В	В	В	Α	В	Α	Α	Α	Α
Barium SulfateDCCAAAABarium SulfateDCCABAAAABenzaldehydeBBAAAAAAAABenzaldehydeBBCABAAAAAABenzol CAcidBD*ABAAAAAABenzol CAcidBD*ABAAAAABorac (Sodium Borate)CACABAAAABorac AcidBDADDDDDAAAAButadieneACCAAAAAAAAAButyleneAAAAAAAAAAAAButyleneAAAAAAAAAAAButyleneAAAAAAAAAAAGalcium BisulfateDDDAAAAAAACalcium BisulfateCC*ABAAAAACalcium BisulfateD*ABAAAAACalcium HydroxideC<	Barium Chloride	D	D	С	Α	С	Α	A	Α	А
Barium SulfideDCCCABAA**BenzaldehydeBBAAAAAAAAABenzolc AcidBD*ABAAAAAABenzolc AcidBD*ABAAAAABorax (Sodium Borate)CACA*AAAAABoric AcidBD*ABAAAAABoric AcidBD*ABAAAAAButadieneACCAAAAA**ButadieneACCAAAA***ButyleneAAAAAAAA**ButylcactateAAAAAAAAACalcium BisulfateCDDABAAACalcium BisulfateCDABAAAACalcium HydroxideC*AAAAACalcium HydroxideCC*AAAACarbon DisulfideCDABAAACarbon DisulfideCDA </td <td>Barium Hydroxide</td> <td>D</td> <td>С</td> <td>С</td> <td>Α</td> <td>В</td> <td>С</td> <td>Α</td> <td>Α</td> <td>В</td>	Barium Hydroxide	D	С	С	Α	В	С	Α	Α	В
John Juline John A A A A A A Benzaldehyde B B A A A A A Benzol Acid B D A A A A A Benzol B D X A B A A A A Benzol B D X A A A A A Boric Acid B D A A A A A A Butane A C C A	Barium Sulfate	D	С	С	Α	В	Α	Α	Α	Α
Derknaderlyde D A A A A A A A A B Benzole B B D * A B A	Barium Sulfide	D	С	С	Α	В	Α	Α	*	*
BenzeneBBCABAAAABenzolAAAAAAAAAABenzolBVAVAAAAAABorax (Sodium Borate)CACAVAAAAABoric AcidBDVABAAAAAABromine (Wet)DDDDADDDDAAAAAButaneACCAA </td <td>Benzaldehyde</td> <td>В</td> <td>В</td> <td>Α</td> <td>Α</td> <td>Α</td> <td>Α</td> <td>Α</td> <td>*</td> <td>A</td>	Benzaldehyde	В	В	Α	Α	Α	Α	Α	*	A
Definition ActionDDAAAAABenzolB*AAAAABorax (Sodium Borate)CACA*AAABoric AcidBD*ABAAAAABoric AcidDDDDDDDDDDAAAAButaneACCAAAA**BButanolA**AAA**AA**ButanolA**AAA**AA***ButyleneAAAAAA*A***BAAA**Butyl AcetateAAAAAA**AA***Calcium BisulfateCC*AA <t< td=""><td></td><td>В</td><td>В</td><td>С</td><td>Α</td><td>В</td><td>Α</td><td>Α</td><td>Α</td><td>В</td></t<>		В	В	С	Α	В	Α	Α	Α	В
BenzolB*A*AAAABorax (Sodium Borate)CACA*AAABoric AcidBD*ABAAAABromine (Wet)DDDDDDDDDDAButadieneACCAAAA**ButaneACCAAAA**ButanolA**AAA**ButyleneAAAAA**AButyric AcidBD*ABBAACalcium BisulfateDDAA**ACalcium BisulfiteC**ABAACalcium HypochloriteCD*ABAACalcium HypochloriteCD*ABAACarbon DisulfideAB*ABAAACarbon DisulfideCC*ABAAACarbon DisulfideCCDABAAACarbon DisulfideCCDAAAACarbon DisulfideCDABAAACarbon Disulfide <td></td> <td>В</td> <td>D</td> <td>*</td> <td>Α</td> <td>В</td> <td>Α</td> <td>Α</td> <td>Α</td> <td>A</td>		В	D	*	Α	В	Α	Α	Α	A
Borax (Sodium Borate)CACACAAAABoric AcidBD*ABAAAABoric AcidDDDDDDDDDDAAButaneACCAAAA**ButaneACCAAAA**ButanolA**AAAA**ButyleneAAAAA*A**Butyl AcetateAAAAA**ACalcium BisulfateC*AA**ACalcium BisulfiteC*A*AAACalcium GabonateCD*ABAACalcium HydroxideCC*AAACalcium SulfateB*AAAACalcium SulfateCDABAACalcium HydroxideCC*AAACalcium SulfateB*AAACalcium SulfateABAAACalcium SulfateCD*AACarbon DisulfideCCCAAACarbon DisulfideC	Benzol	В	*	*	Α	*		Α	*	Α
Bromine (Wet)DDDDDDDDAButadieneACCAAA**ButaneACCAAAA**ButanolA**AAAA**ButyleneAAAAA*AA**Butylic AcidBD*ABBAA**Calcium BisulfateDD*ACCAAA*Calcium BisulfiteC**ABAAAAACalcium ChlorideCC*ABAAAACalcium HydroxideCC*ABAAACalcium HydroxideCC*AAA*Carbon BisulfideAB*AAA*Carbon Dixide (Wet)CCCAAA*Carbon NonoxideA**AAA*Carbon MonoxideA*AAAAACarbon MonoxideA*AAAACarbon CAcidCD*AAACarbon MonoxideA**AAACarbon Ro	Borax (Sodium Borate)	С	Α	С	Α	*	Α	Α	Α	Α
Bromine (Wet)DDDDDDDAButadieneACCAAA**ButaneACCAAA**ButaneACCAAA**ButaneAAAAA**AButyleneAAAA*A*AButylcactateAAAA**C*ButylcactateDD*ACDA*Calcium BisulfateCDD*ACDACalcium GisulfideCC*ABAAACalcium CarbonateCD*ABAAACalcium HydroxideC**ABAAACalcium HydroxideCC*AAA*Carbon DisulfideAB*AAA*Carbon DisulfideCCDABAACarbon ABAAA**Carbon MonoxideA**BAA*Carbon CACDABAA*Carbon KadidAD*ABAACarbon Monoxid	Boric Acid	В	D	*	Α	В	Α	A	A	Α
ButadieneACCAAAA*ButaneACCAAAA**ButanolA**AAAAA**ButyleneAAAAAA*A**ButyleneAAAAA**C*AButyleneAAAA**C*AButyric AcidBD*AA***ACalcium BisulfateDD*ACDA**Calcium BisulfiteC**A*BAAACalcium ChlorideCC*ABAAACalcium HypochloriteCD*ABAAACalcium HypochloriteCDAAA*ACalcium SulfateB**ABAAACarbon BisulfideAB*AAA*ACarbon Dioxide (Wet)CCC*AAACarbon MonoxideA**BAAACarbon ReachingDDABAA*Carbon RonxideA**BA		D	D	D	Α	D				
ButaneACCAAAA*ButanolA**AAAAAAAButyleneAAAAAAAAAAAButyleneAAAAAAAAAAAButyleneAAAAAAAAAAAButyl AcetateAAAAAAAAAAButyric AcidBD*ABBAAACalcium BisulfateC**A*BAAACalcium ChlorideCC*ABAAAACalcium ChlorideCC*ABAAACalcium HydroxideC**ABAAACalcium SulfateB**ABAAACarbon DisulfideCCCAAA*ACarbon MonoxideA***AAA*Carbon CAcidADABAAA*Carbon AddeAA**AA*ACarbon DisulfideCCCDAAA		Α	С	С	Α	Α	Α	Α	*	*
ButanolA**A*AAAAButyleneAAAAAAA*A**ButyleneAAAAAAA**C*AButylacetateA*AAA**C*AButyric AcidBD*ACDA**Calcium BisulfateDD*ACDA**Calcium BisulfiteC**A*DA*ACalcium ChlorideCC*ABAAACalcium ChlorideCC*ABAAACalcium HydroxideC**ABAAACalcium SulfateB**ABAAACarbon DisulfideAB**BAAACarbon MonoxideA***AAA*Carbon TetrachlorideCCD*AAA*Carbon AcidAD*AAA**Carbon AcidAD*AAA**Carbon MonoxideA***AA*Carbon Aci								-	*	*
ButyleneAAAAA*A**AButyl AcetateA*AA**C*AButyric AcidBD*ABBAAACalcium BisulfateDD*ACDA*Calcium BisulfideC**A*BBAACalcium BisulfideC**A*DA*ACalcium CarbonateCD*ABAAAACalcium HydroxideCC*ABAAAACalcium HydroxideCD*ABAAAACalcium SulfateB**ABAAAACarbon BisulfideAB**BAAAACarbon Dixide (Wet)CCCAAA*ACarbon TetrachlorideCDABAAA*Carbonic AcidAD*ABAAAChlorine, Anhydrous LiquidDC*AAA*Carbonic AcidCD*ADDDAChlorine WaterDDA*AA**	Butanol	Α	*				-		*	A
Butyl AcetateA*A**C*AButyric AcidBD*ABBAAACalcium BisulfateDD*ACDA**Calcium BisulfideC**A*BBAAACalcium BisulfideC**A*DA*ACalcium CarbonateCD*ABAAAACalcium ChlorideCC*ABAAAACalcium HydroxideC**ABAAAACalcium SulfateB**ABAAAACarbon BisulfideAB**BAAAACarbon Dioxide (Wet)CCCAAA*ACarbon TetrachlorideCDABAAA*Carbonated WaterAD*AAAA*Chlorine, Anhydrous LiquidDC*AAAAChlorine (Dry)DA*AAAACarbon TetrachlorideCD*AA*Chlorine, Anhydrous LiquidDD*AAAChlorine, Anhydrous Liqu			Α	Α	Α	Α			*	
Butyric AcidBD*ABBAAACalcium BisulfateDD*ACDA**Calcium BisulfideC**A*BB*ACalcium BisulfiteC**A*DA**Calcium CarbonateCD*ABAAAACalcium ChlorideCC**ABAAACalcium HydroxideC**ABAAAACalcium HydroxideCD*ADACCBCalcium SulfateB**ABAAAACarbon BisulfideAB**BAAAACarbon NonoxideA***AAA**Carbon TetrachlorideCDABAAA*Carbon AcidAD**BAAA*Carbonic AcidCD*ABAAA*Carbon TetrachlorideCDABAAA*Carbonic AcidCD*AAA**Carbonic AcidCD*AAA		А	*	Α	Α	*	*	С	*	Α
Calcium BisulfateDD*ACDA**Calcium BisulfideC**A**B*ACalcium BisulfiteC**A*DA*ACalcium CarbonateCD*ABAAAACalcium ChlorideCC*ABAAAACalcium HydroxideCC*ADACCBCalcium HypochloriteCD*ABAAAACalcium SulfateB**ABAAAACarbon BisulfideAB**BAAA*Carbon Dioxide (Wet)CCCA*AA**Carbon TetrachlorideCDABAA**Carbon TetrachlorideCDABAA*Carbonic AcidAD*BAA*Carbonic AcidCD*ABAAChlorine (Dry)DA*AA*Chlorine (Dry)DA*AAAChlorobenzene (Mono)BBCAAAChloroformDDAAA <t< td=""><td></td><td>В</td><td>D</td><td></td><td>Α</td><td>В</td><td>В</td><td>-</td><td>Α</td><td></td></t<>		В	D		Α	В	В	-	Α	
Calcium BisulfideC*A*B*ACalcium BisulfiteC**A*DA*ACalcium CarbonateCD*ABAAAACalcium ChlorideCC*ABAAAACalcium HydroxideC**ABAAAACalcium HypochloriteCD*ADACCBCalcium SulfateB**ABAAAACarbon BisulfideAB**BAAAACarbon Dioxide (Wet)CCCA*AA*Carbon DisulfideCBCA*AA*Carbon TetrachlorideCCDAAA*Carbonated WaterAD**BAA*Carbonic AcidCD*ABAA*Chloracetic AcidCD*ABAA*Chlorinated GlueDD*AA*AChlorine (Dry)DAAAAAChlorine (Dry)DAAAAAChlorobenzene (Mono)BBCAAA <td></td> <td>D</td> <td>D</td> <td>*</td> <td>Α</td> <td>С</td> <td>D</td> <td></td> <td></td> <td></td>		D	D	*	Α	С	D			
Calcium BisulfiteC**A*DA*ACalcium CarbonateCD*ABAAAACalcium ChlorideCC*ABAAAACalcium HydroxideC**ABAA*ACalcium HypochloriteCD*ADACCBCalcium SulfateB**ABAAAACarbon BisulfideAB**BAAAACarbon Dioxide (Wet)CC*A*AA*Carbon DisulfideCBCA*BAA*Carbon TetrachlorideCCDABAA*Carbonated WaterAD**BAA*Carbonic AcidCD*ABAA*Chlorinated GlueDD*A*AA*Chlorine (Dry)DA*AAAAChlorine (Dry)DAAAAAChlorine (Dry)DAAAAAChlorine (Dry)DAAAAAChloriobenzene (Mono)BBCAA <t< td=""><td></td><td>С</td><td>*</td><td>*</td><td>Α</td><td>*</td><td>*</td><td>В</td><td>*</td><td>A</td></t<>		С	*	*	Α	*	*	В	*	A
Calcium ChlorideCCCACADAAAACalcium ChlorideCCC*ADCACalcium HydroxideC*AADAAAACalcium HypochloriteCD*ADAAAACalcium SulfateB**ABAAAAACarbon BisulfideAB**BAAAAACarbon Dioxide (Wet)CCC*AAAA*Carbon DisulfideCBCA*BAAA*Carbon MonoxideA****AAA**Carbon TetrachlorideCCDABAAA*Carbonic AcidAD**BAAA*Chlorinete GlueDD*AAA**Chlorine (Dry)DA*ABAAAAChlorine WaterDDCAAAAAAChlorine WaterDDAAAAAAAChloroformDDCAAAAAAChlorine Qu		C	*	*	Α	*	D	Α	*	A
Calcium ChlorideCCC*ACADCACalcium HydroxideC**ABAA*ACalcium HypochloriteCD*ADACCBCalcium SulfateB**ABAAAABCarbon BisulfideAB**BAAAAAACarbon Dioxide (Wet)CCC*AAA**Carbon DisulfideCBCA*BAAA*Carbon DisulfideCCDABCBAA*Carbon TetrachlorideCCDABCBAA*Carbonic AcidAD*ABAAA*Carbonic AcidCD*ABAA*Chlorine, Anhydrous LiquidDC*ABAA*Chlorine (Dry)DA*ABAAAAChloroformDDCAAAAAChlorine AcidD*DAAAAAChlorine (Dry)DAAAAAAChlorine (Mono)B <t< td=""><td></td><td>C</td><td>D</td><td>*</td><td>Α</td><td>В</td><td>A</td><td></td><td>A</td><td></td></t<>		C	D	*	Α	В	A		A	
Calcium HydroxideC**ABAA*ACalcium HypochloriteCD*ADACCBCalcium SulfateB**ABAAAABCarbon BisulfideAB**BAAAAACarbon Dioxide (Wet)CCC*A*AA*ACarbon DisulfideCBCA*BAA**Carbon DisulfideCCDABCBAA*Carbon DisulfideCCDABCBAA*Carbon TetrachlorideCCDABCBAA*Carbonic AcidAD*ABAAA*Carbonic AcidCD*ABAA*Chlorine, Anhydrous LiquidDC*ABAA*Chlorine (Dry)DA*ABAAAAChlorobenzene (Mono)BBCAAAAAChlorosulfonic AcidD*DAAAAAChlorosulfonic AcidD*AAAAAAC			С	*	Α					
Calcium HypochloriteCD*ADACCBCalcium SulfateB**ABAAAABCarbon BisulfideAB**BAAAAAACarbon Dioxide (Wet)CCC*A*AA*ACarbon DisulfideCBCA*BA**Carbon DisulfideCCCDABAA*Carbon DisulfideCCDABCBAACarbon TetrachlorideCCDABCBAACarbonated WaterAD**BAAA*Carbonic AcidCD*ABABAAChloriacetic AcidCD*ADDDAChlorine, Anhydrous LiquidDC*ABAAAChlorine WaterDDA*AAAAChloroformDDCAAAAAChloroformDDCAAAAAChloroformDDCAAAAAChloroformDCDAA<		C	*	*	Α	В		Α	*	
Calcium SulfateB*AABAAABCarbon BisulfideAB**BAAAA*Carbon Dioxide (Wet)CCC*A*AA*ACarbon DisulfideCBCA*BA***Carbon DisulfideCBCA*BA**Carbon DisulfideCCDABCBA*Carbon TetrachlorideCCDABCBAACarbonated WaterAD**BAAA*Carbonic AcidCD*ABABAA*Chloracetic AcidCD*ABAA**Chlorine, Anhydrous LiquidDC*ABAA*AChlorine (Dry)DA*ABAAAAChloroformDDCAAAAAAChloroformDDCAAAAAChloroformDDCAAAAAChloroformDDCAAAAAChlorosulfonic AcidD* <td< td=""><td></td><td></td><td>D</td><td>*</td><td>Α</td><td>D</td><td>-</td><td>С</td><td>С</td><td>В</td></td<>			D	*	Α	D	-	С	С	В
Carbon BisulfideAB**BAAA*Carbon Dioxide (Wet)CCC*A*AA*ACarbon DisulfideCBCA*BA***Carbon DisulfideCBCA*BA**Carbon DisulfideCCDA****AA*Carbon NonoxideA*****AA**Carbon TetrachlorideCCDABCBAA*Carbonated WaterAD**BAAA*Carbonic AcidCD*ABABAAChloracetic AcidCD*ADDDAChlorine, Anhydrous LiquidDC*ABAA*Chlorine (Dry)DA*ADDDAChlorine WaterDDCAAAAAChloroformDDCAAAAAChloroformDDCAAAAAChlorosulfonic AcidD*DAAAAAChlorosulfonic AcidCD*		В	*	*	Α	В	Α	Α	Α	В
Carbon DisulfideCCRAAACarbon DisulfideCBCA*BA*Carbon MonoxideA***AA**Carbon TetrachlorideCCDABCBACarbon TetrachlorideCCDABAA*Carbonated WaterAD**BAAACarbonic AcidCD*ABAAAChlorinated GlueDD*AAA**Chlorine, Anhydrous LiquidDC*ABAA*Chlorine (Dry)DA*ABAAAAChlorine WaterDDCAAAAAChloroformDDCAAAAAChloroformDDCAAAAAChlorosulfonic AcidD*DAAAAAChromic Acid 50%CD*AAAAAChromic Acid 50%CD*AAAAChromic AcidCD*AAAAChromic Acid 50%CD*AAAACitric OilsC		А	В	*	*	В		Α	Α	*
Carbon DisulfideCBCA*BA**Carbon MonoxideA******AA**Carbon TetrachlorideCCDABCBAA**Carbonated WaterAD**BAAA*Carbonic AcidAD*ABABAA*Chloracetic AcidCD*ADDDDAChlorine, Anhydrous LiquidDC*ABAA**Chlorine (Dry)DA*ABAA*AChlorine WaterDD*AAAAAChloroformDDCAAAAAChlorosulfonic AcidD*DAAAAChlorox (Bleach)CDCAAAAChromic Acid 50%CD*AAAACitric OilsC***AAACitric OilsCT*AAAACopper ChlorideDD*AAAACopper FloborateDD*A*AAChronic AcideDD<	Carbon Dioxide (Wet)	С	С	*	Α	*	Α	Α	*	Α
Carbon MonoxideA****AA**Carbon TetrachlorideCCDABCBAACarbonated WaterAD**BAAA*Carbonic AcidAD*ABABAAAChloracetic AcidCD*ADDDDAChlorinated GlueDD***AA**Chlorine, Anhydrous LiquidDC*ABAA*AChlorine (Dry)DA*ABAA*AChlorine WaterDD*AAAAAChloroformDDCAAAAAChloroformDDCAAAAAChlorosulfonic AcidD*DAAAAChromic Acid 5%CD*AAAAChromic Acid 50%CD*AAAACitric OilsC***AAACitric OilsC***AAACopper ChlorideDD*AAAACopper FloborateDD*A*A		С	В	С	Α	*	В	Α	*	*
Carbonated WaterAD**BAAA*Carbonic AcidAD*ABABABAAChloracetic AcidCD*ADDDDDAAAAChlorinated GlueDDD***AAA**Chlorine, Anhydrous LiquidDC*A*AA**Chlorine (Dry)DA*ABAA*AChlorobenzene (Mono)BBCAAAAAChloroformDDCAAAAAChlorosulfonic AcidD*DAAAAAChlorox (Bleach)CDCAAAAAChromic Acid 50%CD*AAAACitric AcidCD*AAAACitric OilsC***AAACopper ChlorideDD*AAAACopper FloborateDD*A*AA		А	*	*	*	*	Α	Α	*	*
Carbonic AcidAD*ABAACarbonic AcidCD*ABAAChloracetic AcidCD*ADDDAChlorinated GlueDD***AAA*Chlorine, Anhydrous LiquidDC*A*DDA*Chlorine (Dry)DA*ABAA*AChlorobenzene (Mono)BBCAAAAAChloroformDDCAAAAAChlorosulfonic AcidD*DAAAAChlorox (Bleach)CDCAAAAChromic Acid 5%CD*AAAAChromic Acid 50%CD*AAAACitric AcidCD*AAAACitric OilsC***AAACopper ChlorideDD*AAAACopper FloborateDD*A*D*DD*A*AAAA	Carbon Tetrachloride	С	С	D	Α	В	С	В	Α	A
Chloracetic AcidCDADADAAAChloracetic AcidCDDXXAAXXChlorinated GlueDDXXAAXXXChlorine, Anhydrous LiquidDCXABAAXXChlorine (Dry)DAXABAAXAXAChlorine WaterDDXADXAAAAAChlorobenzene (Mono)BBCAAAAAAChloroformDDCAAAAAAChlorosulfonic AcidD*DADTDBChlorox (Bleach)CDCAAAAAChromic Acid 50%CD*AAAACitric AcidCD*AAAACitric OilsC***AAACopper ChlorideDD*AAAACopper FloborateDD*A*DX	Carbonated Water	А	D	*	*	В	Α	Α	Α	*
Chioraceuc ActorCDADDDAChlorinated GlueDDC*AA**Chlorine, Anhydrous LiquidDC*AAA*AChlorine (Dry)DA*ABAA*AChlorine WaterDD*AD*BBChlorobenzene (Mono)BBCAAAAAChlorosulfonic AcidD*DAAAAAChlorosulfonic AcidD*DAAAAAChromic Acid 5%CD*AAAAChromic Acid 50%CD*AAAACitric AcidCD*AAAACitric OilsC***AAACopper ChlorideDD*AAAACopper FloborateDD*A*DD*	Carbonic Acid	А	D	*	Α	В	Α	В	Α	A
Chlorine, Anhydrous LiquidDC*A*AChlorine, Anhydrous LiquidDC*A*ABAA*Chlorine (Dry)DA*ABAA*A*A*AChlorine WaterDD*AD*AD*BBCAAAA*AChlorobenzene (Mono)BBCAAAAAAAAAChloroformDDCAAAAAAAAAChlorosulfonic AcidD*DADD*DBBCChorox (Bleach)CDCA*AAAAAChromic Acid 5%CD*ACBB*ACitric AcidCD*A*AAAACitric OilsC***AAAACopper ChlorideDD*A*AAACopper FloborateDD*A*DD*	Chloracetic Acid	С	D	*	Α	D	D	D	D	Α
Chlorine (Dry)DA*ABAA*AChlorine (Dry)DA*ABAA*AChlorine WaterDDVAD*D*BChlorobenzene (Mono)BBCAAAAAChloroformDDCAAAAAChlorosulfonic AcidD*DADD*DChlorox (Bleach)CDCAAAAChromic Acid 5%CD*AAAAChromic Acid 50%CD*AAAACitric AcidCD*AAAACitric OilsCX**AAACopper ChlorideDD*AAAACopper FloborateDD*AXAA	Chlorinated Glue	D	D	*	*	*	Α	Α	*	*
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Chlorine, Anhydrous Liquid	D	С	*	Α	*	D	D	D	Α
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Chlorine (Dry)	D	Α	*	Α	В	Α	Α	*	Α
ChloroformDDCAAAAChloroformDDCAAAAAChlorosulfonic AcidD*DADD*DBChlorox (Bleach)CDCD*AAAAAChromic Acid 5%CD**AAABAChromic Acid 5%CD*ACBB*AChromic Acid 50%CD*ACBB*ACitric AcidCD*A*AAAACitric OilsC***AA**Copper ChlorideDD*A*AAACopper FloborateDD*A*DD*		D	D	*	Α	D	*	D	*	В
	Chlorobenzene (Mono)	В	В	С	Α	Α	Α	Α	*	A
Chlorox (Bleach)CDCA*AA*Chromic Acid 5%CD***AABAChromic Acid 50%CD**AABAChromic Acid 50%CD*ACBB*ACitric AcidCD*A*AAAACitric OilsC***AAA*Copper ChlorideDD*A*AAACopper FloborateDD*A*DD*	Chloroform	D	D	С	Α	Α	Α	Α	Α	A
Chromic Acid 5%CD**AABAChromic Acid 50%CD**ACBB*ACitric AcidCD*ACBB*ACitric OilsC***AAAACopper ChlorideDD*ACDBACopper CloorateDD*A*AAA	Chlorosulfonic Acid	D	*	D	Α	D	D	*	D	В
Chronic Acid 50%CD*ACBB*Chronic Acid 50%CD*ACBB*ACitric AcidCD*A*AAAACitric OilsC***AAA*Copper ChlorideDD*ACDBACopper CyanideDD*A*AACopper FloborateDD*A*DD	Chlorox (Bleach)	С	D	С	Α	*	Α	Α	*	Α
Chronic Acid 30 / C CDACDACitric AcidCD*A*AAACitric OilsC***AAA*Copper ChlorideDD*ACDBACopper CyanideDD*A*AAACopper FloborateDD*A*DD*	Chromic Acid 5%	С	D	*	*	*	Α	Α	В	Α
Citric OilsC***AA*Copper ChlorideDD*ACDBACopper CyanideDD*A*AAACopper FloborateDD*A*DD*	Chromic Acid 50%	С	D	*	Α	С	В	В	*	Α
Citric OilsC***AA**Copper ChlorideDD*ACDDBACopper CyanideDD*A*AAAACopper FloborateDD*A*DD*B	-	С	D	*	Α	*	Α	Α	Α	
Copper ChlorideDD*ACDDBACopper CyanideDD*A*AAAACopper FloborateDD*A*DD*B		С	*	*	*	*	Α	Α	*	*
Copper CyanideDDD*A*AAAACopper FloborateDD*A*DD*B		D	D	*	Α	С	D	D	В	Α
Copper Floborate D D * A * D D * B		D	D	*	Α	*	Α		Α	
		D	D	*	Α	*		D		
		D	*	*	А	В	Α	А	В	A

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and applications. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK products are not performed and should not be used in medical life support applications. AMETEK products are not performed and should not be used in medical life support applications. AMETEK products are not performed and should not be used in medical life support applications. American are supported as a support application and applications. American are supported as a support application and applications are supported and an are supported and applications. The above characteristics represent standard products. For product advantage of the support applications are supported as a support applications. American are supported and applications are supported and applications and applications are supported as a support application and applications are supported and applications are supported and applications are supported as a support application and applications are supported as a support application and applications are supported and applications are supported as a support application are supported as a support application and applications are supported as a support application are supported as a support applica



Chemical Resistance Chart (Cont'd)

onennoar resistance onart					1		1	1	1	
Chemical Effect Ratings				() ()						
A – No effect – acceptable				lon	<u> </u>	<u>–</u>	<u> </u>	<u> </u>		
B – Minor effect – acceptable				Tef	Ste	Stee	Ste	Ste		
C – Moderate effect – questionable			ē	h (SS	SS	SS	SS		
D – Severe effect – not recommended	Ę	c	Ste	no	nle	nle	nle	nle	2	
* - Not tested	in	Iroi	on	μ	ŝtai	Stai	Stai	Stai		
Chamieal	Aluminum	Cast Iron	Carbon Steel	Chem-Tough (Teflon®)	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Hastelloy C	
Chemical	A	Ű	Ű	Ù	щ	m m	ω.	4	Ĩ	
Copper Sulfate (5% Solution)	D	D	*	Α	*	Α	Α	А	А	
Cresols	В	*	*	*	*	Α	Α	*	*	
Cresylic Acid	C	*	*	Α	В	A	A	*	В	
Cyclohexane	A	*	А	*	*	A	*	*	*	
Detergents	A	*	A	*	*	A	Α	*	*	
Diesel Fuel	A	Α	A	*	Α	A	A	*	*	
	A	А *	*	A	A	A	*	*	*	
Diethylamine		*	*	A *	A *			*	*	
Dyes	B	*	*	*	B	A	A			
Epsom Salts (Magnesium Sulfate)		*	*	*		A	A *	A	<u>B</u> *	
E thane	Α				Α	A		*		
Ether	А	*	В	*	Α	A	Α	Α	В	
E thyl Acetate	В	*	С	Α	*	A	Α	*	В	
E thyl Chloride	В	С	D	Α	*	Α	Α	А	В	
Ethylene Chloride	С	С	С	Α	*	Α	Α	*	В	
Ethylene Dichloride	D	*	С	Α	*	Α	Α	*	В	
Ethylene Glycol	А	В	С	А	*	Α	А	*	Α	
Ethylene Oxide	А	*	*	А	*	*	Α	*	*	
Fatty Acids	В	D	*	Α	*	Α	Α	*	Α	
Ferric Chloride	D	D	*	Α	*	D	D	D	В	
Fer ric Nit rate	D	*	*	Α	*	Α	Α	Α	Α	
Ferric Sulfate	D	D	*	Α	*	Α	С	А	А	
Ferrous Chloride	D	D	*	Α	*	D	D	*	В	
Ferrous Sulfate	D	D	D	A	В	A	C	*	В	
Fluorine	D	D	D	C	D	D	D	*	A	
Fluosilicic Acid	D	D	*	A	*	*	В	*	B	
Formaldehyde	A	D	Α	A	Α	Α	A	*	B	
Formic Acid	D	D	D	A	C	A	B	В	A	
Freon 11	B	C	B	A	A	A *	A	р *	*	
	B	د *	*	A	*	*	D	*	*	
Freon 12 (Wet)		*	*	*	*	*		*	*	
Freon 22	B	*	*	*	*	*	A	*	*	
Freon 113	В						A			
Freon T.F.	В	*	*	*	*	*	Α	*	*	
Fuel Oils	Α	С	В	Α	Α	A	Α	*	A	
Furan Resin	Α	А	Α	Α	*	A	Α	*	*	
Furfural	Α	*	Α	Α	Α	A	Α	*	В	
Gallic Acid	А	D	D	Α	В	Α	А	*	Α	
Gasoline	А	А	А	Α	А	Α	А	А	Α	
Glycerine	А	В	В	Α	Α	Α	Α	А	Α	
Heptane	А	*	В	А	А	*	А	*	Α	
Hexane	А	*	В	Α	Α	Α	Α	*	Α	
Hydraulic Oils (Petroleum)	А	А	А	Α	А	Α	Α	*	*	
Hydraulic Oils (Synthetic)	Α	Α	*	*	*	Α	Α	*	*	
Hydrobromic Acid	D	D	D	А	D	D	D	D	Α	
Hydrochloric Acid (Dry Gas)	D	*	D	Α	D	С	Α	*	Α	
Hydrochloric Acid (20%)	D	D	*	A	*	D	D	D	В	
Hydrochloric Acid (37%)	D	D	*	A	*	D	D	D	B	
Hydrochloric Acid 100%	D	D	*	A	*	D	D	*	C	
Hydrocyanic Acid	A	*	С	A	A	A	A	С	A	
Hydrofluoric Acid (20%)	D	D	*	A	*	D	D	D	B	
Hydrofluoric Acid (20%)	D	D	*	A	*	C	D	*	C	
	ľ	5		1			5			

Hydrofluoric Acid 100%DDDDADDD*BHydrofluosilicic Acid (20%)DDC*A*DDCCHydrogen GasABBAAAA*CC*AHydrogen PeroxideADDAA <t< th=""><th>Chemical</th><th>Aluminum</th><th>Cast Iron</th><th>Carbon Steel</th><th>Chem-Tough (Teflon[®])</th><th>302 Stainless Steel</th><th>304 Stainless Steel</th><th>316 Stainless Steel</th><th>440 Stainless Steel</th><th>Hastelloy C</th></t<>	Chemical	Aluminum	Cast Iron	Carbon Steel	Chem-Tough (Teflon [®])	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Hastelloy C
Hydroflosilicic Acid C * A * D D * C Hydrogen Gas A B B A	Hydrofluoric Acid 100%	D	D	D	Α	D	D	D	*	В
Injurino C I D D A A A F C C A Hydrogen Peroxide A D A A A B A A A B A A A B A A A B A A A B A A A B A	Hydrofluosilicic Acid (20%)	D	D	*	Α	*	D	D	*	В
Tydorogen Peroxide A D D A A C C A Hydrogen Peroxide A D D A * A B A Aqueous Solution C D F A * A B A Hydrogen Sulfide, D D F A * A C A Hydrogen Sulfide (Dry) D D F A * A A C A Ink C D D * A * A <t< td=""><td>Hydrofluosilicic Acid</td><td>С</td><td>*</td><td>*</td><td>Α</td><td>*</td><td>D</td><td>D</td><td>*</td><td>С</td></t<>	Hydrofluosilicic Acid	С	*	*	Α	*	D	D	*	С
Hydrogen PeroxideADDA*ABAHydrogen Sulfide, Aqueous SolutionCD*A*ACAHydrogen Sulfide (Dry)DBBAACA*AHydroxyacetic Acid (70%)D*********InkCDD*AAA***IodineDDVA******IsotaneACBABDA**IsotaneA********IsotaneAAAAAAA**Isopropyl AcetateCC*AAAA*Isopropyl EtherAAAAAAAAALacquersAAAAAAAAALacquersAAAAAAAAAALacquersAAAAAAAAAABAAAAAAAAMagnesium ChlorideDBBAAAAAMagnesium SulfateBCBBAAA <td< td=""><td>Hydrogen Gas</td><td>А</td><td>В</td><td>В</td><td>Α</td><td>Α</td><td>А</td><td>Α</td><td>*</td><td>*</td></td<>	Hydrogen Gas	А	В	В	Α	Α	А	Α	*	*
Hydrogen Sulfide, Aqueous Solution C D * A × A A C A Hydrogen Sulfide (Dry) D B B A A C A * A Hydrogen Sulfide (Dry) D B B A A C A * <t< td=""><td>Hydrogen Peroxide 10%</td><td>А</td><td>D</td><td>*</td><td>А</td><td>*</td><td>С</td><td>С</td><td>*</td><td>Α</td></t<>	Hydrogen Peroxide 10%	А	D	*	А	*	С	С	*	Α
Aqueous SolutionCD*A*AACAHydrogen Sulfide (Dry)DBBAACA**InkCDV********InkDDVAAAA***IodineDDVA******IodoformACBABDA***IsotaneA*********Isopropyl AcetateC**AAAA**Jet Fuel (JP3, JP4, JP5)AAAAAAAAAAKeroseneAAAAAAAAAAALactic AcidCDDAAAAAAAALead AcetateDDDCABBAAAAALactic AcidDDDDDDDDDDDDLead AcetateDDDCABBAAAAAALactic AcidC*DAABAAAAAMagnesiu	Hydrogen Peroxide	А	D	D	А	*	А	В	А	Α
Aqueous SolutionCD*A*AACAHydrogen Sulfide (Dry)DBBAACA**InkCDV********InkDDVAAAA***IodineDDVA******IodoformACBABDA***IsotaneA*********Isopropyl AcetateC**AAAA**Jet Fuel (JP3, JP4, JP5)AAAAAAAAAAKeroseneAAAAAAAAAAALactic AcidCDDAAAAAAAALead AcetateDDDCABBAAAAALactic AcidDDDDDDDDDDDDLead AcetateDDDCABBAAAAAALactic AcidC*DAABAAAAAMagnesiu	Hydrogen Sulfide,									
Hydrogen Sulfide (Dry) D B B A A C A * <td></td> <td>С</td> <td>D</td> <td>*</td> <td>Α</td> <td>*</td> <td>А</td> <td>Α</td> <td>С</td> <td>А</td>		С	D	*	Α	*	А	Α	С	А
Hydroxyacetic Acid (70%) D * </td <td></td> <td>D</td> <td>В</td> <td>В</td> <td>Α</td> <td>Α</td> <td>С</td> <td>Α</td> <td>*</td> <td>A</td>		D	В	В	Α	Α	С	Α	*	A
Institution C D D A A A A A A D D B Iodioform A C B A B D A *		D	*	*	*	*	*	*	*	*
Iodin D <td></td> <td>С</td> <td>D</td> <td>D</td> <td>*</td> <td>Α</td> <td>А</td> <td>Α</td> <td>*</td> <td>*</td>		С	D	D	*	Α	А	Α	*	*
Isotane A C D A D A Isotane A *	lodine	D	D	*	Α	*	D	D	D	В
Isopropyl Acetate C *	lodoform	А	С	В	Α	В	D	Α	*	*
Isopropyl Acetate C * Isot of theres of theres of theres of			*	*		*	*		*	*
Isopropyl EtherA*AAA*A**Jet Fuel (JP3, JP4, JP5)AA </td <td></td> <td></td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> <td>*</td> <td>В</td> <td>*</td> <td>*</td>			*	*	*	*	*	В	*	*
Jet Fuel (JP3, JP4, JP5)AA<		A	*	Α	Α	Α	*	Α	*	*
KeroseneAAAAAAAAAAAKetonesBAAAAAAAAAAALacquersACC*AAAA**Lactic AcidCDDAAAA**Lactic AcidCD*DABA*ALead AcetateD*DABAA*ALubricantsA**A*AA*AMagnesium ChlorideDDCABBAA*AMagnesium SulfateBCBAAAAAAAMalic AcidB*BAAAAAAMalic AcidC*DABAAAAMetruric Chloride (Dilute Solution)DDDDDDDDMethaneAAAAAAAAAAMethyl AcetateAAAAAAAAAMethyl Butyl KetoneA**AAAAAAMethyl ChlorideDAAAAAAAAMethyl Le			Α				Α		*	*
KetonesBAAAAAAAALacquersACC*AAA**Lactic AcidCDDAAABCALead AcetateD*DABAA*ALubricantsA**A*AA*AMagnesium ChlorideDDCABBAA*AMagnesium HydroxideDBBAAAAAAAMagnesium SulfateBCBABAAAAMalic AcidC*DABAAAAMercuric Chloride (Dilute Solution)DDDAAAAAMethyl AcetateAAAAAAAAAMethyl AcetateAAAAAAAAAMethyl Alcohol 10%C*BAAAAAMethyl CellosolveA*A*AAAAMethyl ChlorideDA*AAAAMethyl ChlorideA*AAAAAMethyl ChlorideA*A*AAAMethyl C									Α	Α
LacquersACC*AAA**Lactic AcidCDDAAABCALead AcetateD*DABAA*ALubricantsA**A*AA*AMagnesium ChlorideDDCABBBAA*AMagnesium SulfateBCBABBAAAAAMalic AcidC*DABAAAAAMalic AcidC*DABAAAAMercuric Chloride (Dilute Solution)DDDAAAAAMethaneAAAAAAAAAAMethyl AcetateAAAAAAAAAAMethyl AcetoneAAAAAAAAAAMethyl RetoneA*********Methyl Ethyl KetoneA**AAAAAAMethyleneABBAAAAAMethyl ChlorideD**A*A*Methyl RetoneA<										
Lactic AcidCDDAAABCALead AcetateD*DABA*AA*ALubricantsA**A*A*A*A*AMagnesium ChlorideDDCABBBAA*AMagnesium HydroxideDBBAAAA*AMagnesium SulfateBCBABBAAAAMalic AcidC*DABAAAAAMercuric Chloride (Dilute Solution)DDDAAAAAMethaneAAAAAAAAAAMethaneAAAAAAAAAAMethyl AcetateAAAAAAAAAMethyl RetoneAAAAAAAAAMethyl Ethyl KetoneA*******Methylene ChlorideDABAAAAMethyleneABBAAAAMethyl CellosolveA*****Methyl RetoneA*A </td <td></td> <td>Α</td> <td>С</td> <td>С</td> <td>*</td> <td>Α</td> <td>Α</td> <td></td> <td>*</td> <td>*</td>		Α	С	С	*	Α	Α		*	*
Lead AcetateD*DABAA*ALubricantsA**A*A*A*AMagnesium ChlorideDDCABBBAA*AMagnesium HydroxideDBBAAAA*AMagnesium SulfateBCBABBAAAAMaleic AcidC*DABAAAAMalic AcidC*DABAAAAMercuric Chloride (Dilute Solution)DDDAAAAAMercuryCAAAAAAAAAMethaneAAAAAAAAAAMethyl AcetateAAAAAAAAAMethyl Il Cohol 10%C*BAAAAAMethyl CellosolveA*******Methyl ChlorideD*AAAAAAMethyl ChlorideD**A*AAMethyl ChlorideA*A*AAAMethyl Ethyl KetoneA**A*A<				D	Α				С	Α
LubricantsA*A*A*A*A*AMagnesium ChlorideDDCABBBAAMagnesium HydroxideDBBAAAA*AMagnesium SulfateBCBABBAAA*AMaleic AcidB*BACAAAAAAMalic AcidC*DABAAAAAMercuric Chloride (Dilute Solution)DDDAAAAAMercuryCAAAAAAAAAMethaneAAAAAAAAAAAMethyl AcetateAAAAAAAAAAMethyl Alcohol 10%C*BAAAAAMethyl CellosolveA*******Methyl ChlorideD**A*AAAMethyl Ethyl KetoneA*A*A*AMethyl IchlorideD**AAAAMethyl ChlorideA*A*AAAMethyl Ethyl KetoneA* <td></td> <td>D</td> <td>*</td> <td>D</td> <td></td> <td></td> <td></td> <td>Α</td> <td>*</td> <td></td>		D	*	D				Α	*	
Magnesium ChlorideDDCABBAAMagnesium HydroxideDBBAAAAAAAMagnesium SulfateBCBABBAAAAAMaleic AcidB*BACAAAAAMalic AcidC*DABAAAAAMalic AcidC*DABAAAAAMercuric Chloride (Dilute Solution)DDDAAAAAMercuric CyanideD*DAAAAAAMethaneAAAAAAAAAAMethyl AcetateAAAAAAAAAMethyl Alcohol 10%C*BAAAAAMethyl CellosolveA******Methyl ChlorideD**A*AAAMethyl Ethyl KetoneA*A*A*AMethyl IchlorideA*AAAAAMethyl Ethyl KetoneA*A*AAMethylene ChlorideA*BAAAA <t< td=""><td></td><td>A</td><td>*</td><td>*</td><td></td><td></td><td></td><td></td><td>*</td><td></td></t<>		A	*	*					*	
Magnesium HydroxideDBBAAAA*AMagnesium SulfateBCBABBA*BMaleic AcidB*BACAAAAMalic AcidC*DABAAAAMalic AcidC*DABAAAAMercuric Choride (Dilute Solution)DDDADDDDMercuric CyanideD*DAAAAAMetruryCAAAAAAAMethaneAAAAAAAAMethyl AcetateAAAAAAAMethyl AcetoneAAAAAAAMethyl Il Cohol 10%C*BAAAAMethyl CellosolveA******Methyl ChlorideD**A*AAAMethyl Ethyl KetoneA*A*A*AMethylene ChlorideA*BBAAAAMethylene ChlorideDDAAAAANitheleneBBAAAAAMethyleane<			D	С		В			Α	
Magnesium SulfateBCBABBA*BMaleic AcidB*BACAAAAAMalic AcidC*DABACAAAAAMalic AcidC*DABAAAAAAAMercuric Choride (Dilute Solution)DDDDAAAAAAMercuric CyanideD*DAAAAAAAAMetruryCAAAAAAAAAAMethaneAAAAAAAAAAMethyl AcetateAAAAAAAAAMethyl Alcohol 10%C*BAAAAAMethyl Butyl KetoneA*******Methyl CollosolveA**AAAAAMethyl Ethyl KetoneA*A*AAAMethylene ChlorideA*BAAAAMethylene ChlorideA*BAAAANapthaABBAAAAANickel ChlorideD<				-						
Maleic AcidB*BACAAAAMalic AcidC*DABAA*AMercuric Chloride (Dilute Solution)DDDADDDDDDMercuric CyanideD*DAAAAA**MercuryCAAAAAAAAAAAMethaneAAAAAAAAAAAAMethyl AcetateAAAAAAAAAAAMethyl AcetoneAAAAAAAAAAMethyl Illoohol 10%C*BAA*A*AMethyl CellosolveA********Methyl ChlorideD**A*AAAAMethyl Ethyl KetoneA**A*A*AMethylene ChlorideA*BBAAAAANapthaABBAAAAAANickel ChlorideDDAAAAAANickel ChlorideDDDAAAAA </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>*</td> <td></td>									*	
Malic AcidC*DABAA*AMercuric Chloride (Dilute Solution)DDDADDDDBMercuric CyanideD*DAAAAAAAAAAMercuryCAAAAAAAAAAAAMethaneAAAAAAAAAAAAMethyl AcetateA*BAAAAAAAAMethyl AcetoneAAAAAAAAAAMethyl Illoohol 10%C*BAAAAAMethyl EllosolveA*******Methyl CellosolveA*A*AAAAMethyl Ethyl KetoneA**A*AAMethylene ChlorideA*BBAAAANapthaABBAAAAANickel ChlorideDDXAAAANickel ChlorideDDDAAAANickel ChlorideDDAAAANitric Acid (10% Solution)DDA </td <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Α</td> <td></td>			-						Α	
Mercuric Chloride (Dilute Solution)DDDADDDDBMercuric CyanideD*DAA<			*							
Mercuric CyanideD*DAAAA**MercuryCAAAAAAAAAAAMethaneAAAAAAAAAAAAAMethyl AcetateA*BAAAAAAAAMethyl AcetateA*AAAAAAAAAMethyl AcetaneAAAAAAA*A*AMethyl AcetoneAA*****A*AMethyl Illoolol 10%C*BAA*A**Methyl CellosolveA*********Methyl ChlorideD**A*A*A**Methyl Ethyl KetoneA**A*A*A*AMethylamineABBAAAAAAANapthaABBAAAAAANapthaleneBBAABAAAANickel ChlorideDDAAAAAANitric Acid (10% Solution)D<			D						D	
MercuryCAAAAAAAAMethaneAAAAAAAAAAAMethyl AcetateA*BAAAAAAAAAMethyl AcetateA*AAAAAAAAAAAMethyl AcetoneAAAAAAA*A**Methyl Alcohol 10%C*BAA*A*A**Methyl Butyl KetoneA**********Methyl CellosolveA**A*A******Methyl ChlorideD**A*A*A***MethylamineABB*A*A*A*AMethylene ChlorideA*BAAAAAANapthaABBAAAAAANickel ChlorideDD*A*AAANickel SulfateDDDAAAAANitric Acid (10% Solution)DD*A*AAANitri		D	*	D	Α	Α	Α	Α	*	*
MethaneAAAAAAAAAMethyl AcetateA*BAA*A*AMethyl AcetoneAAAAAA*A*AMethyl AcetoneAAAAAA*A**Methyl Alcohol 10%C*BAA*A*AMethyl Butyl KetoneA********Methyl CellosolveA*********Methyl ChlorideD**A*A*A**Methyl Ethyl KetoneA**A*A*A*AMethylamineABB*A*A*AMethylene ChlorideA*BAAAAANapthaABBAAAAANickel ChlorideDDAAAAANickel SulfateDDDAAAANitric Acid (10% Solution)DDAAAANitric Acid (50% Solution)DD*A*A		C	Α						Α	Α
Methyl AcetateA*BAA*A*AMethyl AcetoneAAAAAAA*A**Methyl Alcohol 10%C*BAA*A*A*AMethyl Butyl KetoneA*****A*A*AMethyl CellosolveA**********Methyl ChlorideD**A*A*A***Methyl Ethyl KetoneA**A*A*A*AMethylamineABB*A*A*AMethylene ChlorideA*BAAAAANapthaABBAAAAANapthaleneBBAABBANickel ChlorideDDAAAANitric Acid (10% Solution)DDAAAANitric Acid (50% Solution)DD*A*A										
Methyl Acetone A										
Methyl Alcohol 10%C*BAA*A*AMethyl Butyl KetoneA******A**Methyl CellosolveA***********Methyl CellosolveA************Methyl ChlorideD**A*CA*AMethyl Ethyl KetoneA**A*AA*AMethylamineABB*A*A*AMethylene ChlorideA*BAAAAANapthaABBAAAAANapthaleneBBAABBANickel ChlorideDDDAAAANitric Acid (10% Solution)DDDAAAANitric Acid (50% Solution)DD*A*AANitric AcidIIIIIIII			Α	Α		Α	*		*	
Methyl Butyl KetoneA****A***A***A***<	· · · · ·		*	В	Α	Α	*	A	*	A
Methyl CellosolveA** <td>· · · · · ·</td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td>*</td> <td></td> <td>*</td> <td></td>	· · · · · ·		*				*		*	
Methyl ChlorideD**A*CA*AMethyl Ethyl KetoneA**A*A*A*AMethylamineABB*A*A*A*AMethylamineABB*A*A*A*AMethylene ChlorideA*BAAAAAAANapthaABBAAAAAAANickel ChlorideDD*A*AB*ANickel SulfateDDDABAAAANitric Acid (10% Solution)DDXA*AAANitric Acid (50% Solution)DD*A*AAANitric AcidIIIIIIIIII		А	*	*	*	*	*	*	*	*
Methyl Ethyl KetoneA*A*A*A*AMethylamineABB*A*A*AMethylene ChlorideA*BAAAA*ANapthaABBAAAAAAANapthaABBAAAAAAANickel ChlorideDD*A*AB*ANickel SulfateDDDAAAAANitric Acid (10% Solution)DDAAAAANitric Acid (50% Solution)DD*A*AANitric AcidIIIIIIII			*	*	Α	*	С	Α	*	Α
MethylamineABB*A*A**Methylene ChlorideA*BAAAAAAAANapthaABBAAAAAAAAANapthaABBAABBAAAAAANapthaleneBBAABBAABBANickel ChlorideDDVAABBANickel SulfateDDDABABBNitric Acid (10% Solution)DDDAAAANitric Acid (50% Solution)DD*A*AAANitric AcidIIIIIIIII	/		*	*		*			*	
Methylene ChlorideA*BAAAA*ANapthaABBAAAAAAAANapthaleneBBAABBAABBAAAAAANickel ChlorideDD*A*AB*AB*ANickel SulfateDDDDABAB*BNitric Acid (10% Solution)DDDAAAAANitric Acid (50% Solution)DD*A*AAANitric AcidIIIIIIIII			В	В		Α			*	
NaprhaABBAAAAAANapthaleneBBAABAB*ANickel ChlorideDD*A*AB*ANickel SulfateDDDA*AB*ANitric Acid (10% Solution)DDDAAAAANitric Acid (20% Solution)DD*A*AAANitric Acid (50% Solution)DD*A*AAANitric Acid					Α		Α		*	Α
NapthaleneBBAABAB*ANickel ChlorideDDVA*AB*ANickel SulfateDDDDABAB*ANitric Acid (10% Solution)DDDAAAAAANitric Acid (20% Solution)DD*A*AAAANitric Acid (50% Solution)DD*A*AAANitric Acid			В						Α	
Nickel Chloride D D A A B * A Nickel Sulfate D D D A B A B * B Nitric Acid (10% Solution) D D D A										
Nickel SulfateDDDDABAB*BNitric Acid (10% Solution)DDDDAAAAAANitric Acid (20% Solution)DD*A*AAAANitric Acid (50% Solution)DD*A*AAANitric AcidOD*A*AAA									*	
Nitric Acid (10% Solution) D D D A </td <td></td>										
Nitric Acid (20% Solution) D D X A X A </td <td></td>										
Nitric Acid (50% Solution) D D A * A A A Nitric Acid Image: Acid Acid Acid Acid Acid Acid Acid Acid										
Nitric Acid										
		-			-		~	-	~	<u> </u>
		В	D	*	А	*	D	В	А	В

This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and application. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK products without notification. The above characteristics represent standard products. For product designed to meet specific applications, contact AMETEK Technical & Industrial Products Sales department.



Chemical Resistance Chart (Cont'd)

onennear resistance onart			~,			-			
Chemical Effect Ratings				() ()					
A – No effect – acceptable				flor	ē	<u>e</u>	<u>e</u>	<u>e</u>	
B – Minor effect – acceptable				(Te	Ste	Ste	Ste	Ste	
C – Moderate effect – questionable D – Severe effect – not recommended	_		ee	дh	ess	ess	ess	ess	U
* – Not tested	пл	n	St	Γοη	inle	inle	inle	inle	5 N
Nottested	Lin I	t Iro	Joc	έ	Sta	Sta	Sta	Sta	tell
Chemical	Aluminum	Cast Iron	Carbon Steel	Chem-Tough (Teflon [®])	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	Hastelloy
								×	
Nitrobenzene	C	B *	B	A	В	A *	B	*	B *
Oleum	B		B	A	B		A		
Oxalic Acid (cold)	C	D	D	A	C	A	B	A *	B
Pentane	A	В	В	A	A	C	C		B *
Perchloroethylene	A	B	B	A	B	A *	A	*	*
Petrolatum	В	C	C	A	A		A	*	
Phenol 10%	A	В	D	A	B	A	A		B
Phenol (Carbolic Acid)	В	D	D	Α	В	Α	Α	Α	A
Phosphoric Acid		_	di.			_			
(to 40% Solution)	D	D	*	Α	*	В	Α	Α	A
Phosphoric Acid			ىلە		ىلە		_	_	
(40%-100% Solution)	D	D	*	A	*	C	B	B	A
Phosphoric Acid (Crude)	D	D *	D *	A	*	D	C	C *	A *
Phosphoric Anhydride (Molten)	D			A *	*	A	A		
Photographic (Developer)	C	D	*		*	C	A	C	A
Phthalic Anhydride	В	C	C	A	В	A	B	*	A
Picric Acid	С	D	D	A	B	Α	A	*	A
Potash	С	В	*	*	*	Α	*	Α	A
Potasium Bicarbonate	C	D	*	Α	*	Α	*	В	В
Potassium Bromide	С	D	D	Α	Α	Α	*	В	В
Potassium Carbonate	С	В	В	А	В	Α	*	А	Α
Potassium Chlorate	В	В	В	Α	В	A	Α	Α	В
Potassium Chloride	В	В	В	Α	С	Α	Α	В	Α
Potassium Chromate	Α	А	*	*	*	*	В	В	В
Potassium Cyanide Solutions	D	В	В	Α	В	A	В	Α	Α
Potassium Dichromate	Α	В	С	А	В	Α	Α	Α	В
Potassium Ferrocyanide	С	*	С	Α	В	A	*	А	В
Potassium Hydroxide (50%)	D	С	А	А	А	В	В	В	Α
Potassium Nitrate	В	*	В	Α	В	A	В	Α	В
Potassium Permanganate	В	В	В	Α	В	A	В	В	В
Potassium Sulfate	Α	В	В	А	В	Α	В	В	Α
Potassium Sulfide	В	В	В	А	Α	Α	*	Α	B
Propane (Liquified)	Α	*	В	Α	Α	Α	*	Α	*
Propylene Glycol	Α	В	В	Α	B	В	*	Α	*
Pyridine	В	В	Α	Α	*	C	*	В	*
Pyrogallic Acid	В	В	В	Α	В	A	A	Α	A
Silver Bromide	D	*	*	*	*	C	С	В	*
Silver Nitrate	D	D	D	Α	В	A	В	Α	A
Sodium Acetate	В	C	С	Α	В	A	A	В	A
Sodium Aluminate	С	*	С	Α	В	*	*	Α	B
Sodium Bicarbonate	Α	С	С	Α	В	Α	Α	Α	*
Sodium Bisulfate	D	D	D	А	Α	Α	*	А	В
Sodium Bisulfite	Α	D	*	Α	*	Α	*	Α	В
Sodium Borate	С	С	С	А	В	Α	*	А	A
Sodium Carbonate	С	В	В	Α	В	A	В	В	Α
Sodium Chlorate	В	*	С	A	В	A	*	A	В
Sodium Chloride	С	В	С	Α	В	Α	С	В	A
Sodium Chromate	D	В	В	Α	Α	Α	A	*	B
Sodium Cyanide	D	В	В	Α	В	Α	*	Α	*
Sodium Fluoride	C	D	D	А	В	C	*	C	A
									_

Chemical	Aluminum	Cast Iron	Carbon Steel	Chem-Tough (Teflon [®])	302 Stainless Steel	304 Stainless Steel	316 Stainless Steel	440 Stainless Steel	> Hastelloy C
Sodium Hydrosulfite	А	*	*	Α	*	*	*	*	Α
Sodium Hydroxide (20%)	D	Α	*	A	*	Α	Α	Α	A
Sodium Hydroxide (50% Solution)	D	В	*	A	*	A	B	*	A
Sodium Hydroxide (80% Solution)	D	C	*	A	*	A	D	*	B
Sodium Hypochlorite (to 20%)	D	C	*	A	*	A	D	*	B
Sodium Hypochlorite	D	D	D	A	D	*	A	*	A
Sodium Hyposulfate	D	*	*	A	*	Α	A	*	*
Sodium Metaphosphate	A	В	В	A	A	*	A	*	*
	B	C		A	A	*	A	*	*
Sodium Metasilicate		-	C						
Sodium Nitrate Sodium Perborate	A B	A B	B	A	B B	A *	A C	A *	<u>B</u> *
				A			A	*	
Sodium Peroxide	С	D	С	А	В	Α	A	Ŧ	В
Sodium Polyphosphate					ىلە				
(Mono, Di, Tribasic)	D	*	*	A	*	A	A	*	<u>A</u>
Sodium Silicate	С	*	B	A	В	A	B	A	B
Sodium Sulfate	В	Α	В	Α	В	Α	Α	C	B
Sodium Sulfide	D	Α	В	Α	В	Α	В	*	B
Sodium Sulfite	С	A	*	Α	*	C	C	*	<u>A</u>
Sodium Thiosulphate ("Hypo")	В	С	В	Α	А	Α	Α		
Stannic Chloride	D	D	D	А	D	D	D	*	В
Stannous Chloride	D	D	D	А	D	D	С	*	Α
Stearic Acid	В	С	С	А	В	Α	Α	Α	A
Stoddard Solvent	А	В	В	Α	А	Α	Α	Α	A
Styrene	А	*	А	А	А	Α	Α	*	*
Sulfate Liquors	В	*	*	*	*	С	С	*	A
Sulfur Chloride	D	*	*	А	*	D	D	D	*
Sulfur Dioxide	А	*	*	Α	*	Α	Α	С	В
Sulfur Dioxide (Dry)	А	А	В	А	А	Α	Α	*	Α
Sulfur Trioxide (Dry)	А	В	В	Α	А	Α	С	*	*
Sulfuric Acid (to 10%)	С	D	*	А	*	D	С	С	Α
Sulfuric Acid (10%-75%)	D	D	*	Α	*	D	D	D	В
Sulfurous Acid	С	D	D	А	С	С	В	С	В
Tannic Acid	С	С	С	А	В	Α	Α	А	В
Tanning Liquors	С	*	*	А	*	Α	Α	*	Α
Tartaric Acid	С	D	D	Α	В	Α	В	В	В
Tetrahydrofuran	D	D	А	А	*	Α	Α	*	*
Toluene, Toluol	А	А	А	А	А	Α	Α	*	А
Trichlorethane	С	С	*	Α	*	С	Α	*	Α
Trichlorethylene	В	С	В	А	В	Α	Α	*	А
Water, Acid, Mine	С	С	*	*	*	Α	Α	*	*
Water, Distilled, Lab Grade 7	В	D	*	А	*	Α	Α	*	*
Water, Fresh	А	В	D	Α	А	Α	Α	*	*
Water, Salt	В	D	*	*	*	Α	Α	*	*
Weed Killers	C	*	*	*	*	A	A	*	*
Whiskey and Wines	D	D	D	Α	А	A	A	Α	*
Xylene	A	A	В	A	A	A	A	*	Α
Zinc Chloride	D	D	D	A	D	A	В	В	В
Zinc Hydrosulphite	D	D	*	*	*	*	A	*	*
Zinc Sulfate	D	C	D	А	В	Α	A	Α	В
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This document is for informational purposes only and should not be considered as a binding description of the products or their performance in all applications. The performance data on this page depicts typical performance under controlled laboratory conditions. AMETEK is not responsible for blowers driven beyond factory specified speed, temperature, pressure, flow or without proper alignment. Actual performance will vary depending on the operating environment and applications. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK products are not designed for and should not be used in medical life support applications. AMETEK products are not performed and should not be used in medical life support applications. AMETEK products are not performed and should not be used in medical life support applications. AMETEK products are not performed and should not be used in medical life support applications. American are supported as a support application and applications. American are supported as a support application and applications are supported and an are supported and applications. The above characteristics represent standard products. For product advantage of the support applications are supported as a support applications. American are supported and applications are supported and applications and applications are supported as a support application and applications are supported and applications are supported and applications are supported as a support application and applications are supported as a support application and applications are supported and applications are supported as a support application are supported as a support application and applications are supported as a support application are supported as a support applica



Filtration - Inline Filter (Dual Connection)

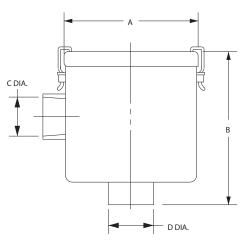
Inline Filters protect the blower from harmful dust and other particles that may be drawn into the blower through the air distribution system. Normally used in vacuum systems.

SPECIFICATIONS:

Inline filter PN 271200 is a straight through design Inlet is directly opposite of outlet

HOUSING – Steel MEDIA – Polyester EFFICIENCY – 97-98% (8 to 10 micron particle size) FILTER ELEMENT – Replaceable (see filter elements) NOTE: "Z" MEDIA (1 to 3 micron particle size) available

* Feature 1/4" threaded tap for gauge connection on inlet and outlet



ROTRON®

					Part/Mode	el Number			
Specification	Units	271200	516461	515254	515255	515256	516463*	516465*	517611*
Filter Element	-	271078	516434	516434	516435	516435	515135	515135	516515
Ref Blower Model	-	A	В	C, D	E	F	G	Н	Н
Inlet Connection	-	1.75 SO	1.00 NPSC-F	1.50 NPSC-F	2.00 NPSC-F	2.50 NPSC-F	3.00 NPT-M	4.00 NPT-M	6.00 NPT-M
Outlet Connection	-	2.00 SO	1.00 NPSC-F	1.50 NPSC-F	2.00 NPSC-F	2.50 NPSC-F	3.00 NPT-M	4.00 NPT-M	6.00 NPT-M
Dimension A	Inches	5.25	7.25	7.00	8.00	8.00	14.00	14.00	18.00
Dimension A	mm	133.4	184.2	177.8	203.2	203.2	355.6	355.6	457.2
Dimension B	Inches	8.31	6.50	6.50	10.25	10.25	26.50	27.00	28.00
Dimension B	mm	211.1	165.1	165.1	260.4	260.4	673.1	685.8	711.2
Dimension C	Inches	2.00	1.00	1.50	2.00	2.50	3.00	4.00	6.00
Dimension C	mm	50.8	25.4	38.1	50.8	63.5	76.2	101.6	152.4
Dimension D	Inches	1.75	1.00	1.50	2.00	2.50	3.00	4.00	6.00
Dimension D	mm	44.5	25.4	38.1	50.8	63.5	76.2	101.6	152.4
Z Media Filter PN	-		517886	517887	517888	517889	517890	517891	517892

Blower Model Reference Key				
A = SPIRAL	E = DR/EN/CP 656, 6, 633, S7			
B = DR/EN/CP 068, 083, 101, 202	F = DR/EN/CP 757, 808, 858, S9, P9 (Inlet Only)			
C = DR/EN/CP 303, 312, 313, 353	G = DR/EN/CP 833, S13, P13 (Inlet Only)			
D = DR/EN/CP 404, 454, 513, 505, 555, 523	H = DR/EN/CP 909, 979, 1233, 14, S15, P15 (Inlet Only)			

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NIXTOX Steel Drum Adsorbers

Modular Activated Carbon Vapor Phase Adsorbers

Solutions for Vapor Phase Remediation & Industrial Emission Control



hese economical deep bed activated carbon adsorption units may be used as refillable or disposable adsorbers.

Rain shields are available and condensate drains are standard. The activated carbon units

are constructed of carbon steel and provided with a double epoxy / phenolic lining. All adsorption units feature specially constructed vapor distributors to permit full adsorbent utilization and peak removal efficiency.

Custom distributors for high temperature applications are available upon request.

NOTES:

- Nominal design flow may be conservative.
- Desired contact time may allow higher or lower flow rates.
- Dry virgin activated or reactivated carbon provided as standard adsorbent.
- Adsorbent fill is based on a bed density of 27 lb/ft3
- Adsorbent fill can differ based on variable bed density and alternate adsorbents.
- Pressure drops are based on a dense packed bed of activated carbon.



Modular Activated Carbon Vapor Adsorber Drums

Model #	Design Flow (CFM)	Max Temp	Max Pressure (PSIG)	Diameter/ Height (IN)	Standard Fill (LBS)	Shipping Weight
N-100	100	200	6	24.5/37.75	200	260
N-250	250	130	1	32/47	400	530

Call a TIGG Representative Today at 800-925-0011



TIGG, LLC 1 Willow Avenue www.TIGG.com Oakdale, PA 15071

Purifying Air & Water

4/15

2" MNPT OUTLET 3/4" FNPT BREAKTHROUGH INDICATOR FITTING 2" MNPT INLET 20" œ 315%" IIGC: 30" 1/2" CONDENSATE DRAIN TOT 1⅔" —► 21/4" 22<u>3/</u>8" -4½" PLAN ELEVATION REVISE PRESSURE RATING JB 1/2/07 2 GENERAL JB 6/11/0 REVISION BY DATE PROJECT VESSF STANDAR PROJ. NO. SALES VESSEL MATERIALS : CARBON STEEL APPROXIMATE VOLUME OF VESSEL : 4 FT³ P.O. NO. THIS DRAWING AND DESIGN ARE THE PROPERTY OF TIGG CORP. AND SHALL NOT BE REFEROLICEO IN WHOLE OR IN PURPOSE OTHER THAN SPECIFICALLY PERPIRTED IN WRITING BY TIGG CORP. RETURN ON DEMAND. curporation LINING : FPOXY PHENOLIC STANDARD CARBON FILL : 110 LBS EXTERIOR PAINT : ACRYLIC ALKYD ENAMEL SHIP WEIGHT : 145 LBS N-50 DRUM DRAWN BY ZS INTERNALS : STAINLESS STEEL SCREEN CARBON TYPE : TIGG 5C 0410 VAPOR PHASE DESIGN BY BL CHKD. BY BL ADSORBENT OUTLET ASSEMBLY : REMOVABLE COVER MAXIMUME OPERATING PRESSURE : 6 PSIG DWG. NO. DATE 2/22/00 rev. 2 N-50-1001 CONDENSATE DRAIN ASSEMBLY : 1/2" PLUG MAXIMUME OPERATING TEMPERATURE : 200°F SCALE NTS

<u>Attachment 3</u> SVE System Design Details

