



Contamination Knowledge Report: Acetal Valve

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Summary

An “acetal” S/C purge distribution valve (<http://www.colder.com/Tabid/72/MaterialID/1/cID/1/sID/4/tID/6/pID/537/Products.aspx>) was analyzed to determine if the components were of concern. The outgassing of naphthalene, among other compounds is unacceptable. Recommend that LM replace this valve with a different one.

Workup

Rinse 1: 1 mL of Hexane was placed in the well of the valve and allowed to sit for 5 minutes
The valve was allowed to dry for 5 minutes

Rinse 2: 1 mL of Ethyl Acetate was placed in the well of the valve and allowed to sit for 5 minutes

The valve was allowed to dry for 5 minutes

Rinse 3: 1 mL of Methanol was placed in the well of the valve and allowed to sit for 5 minutes
The valve was allowed to dry for 5 minutes

Results

Methanol rinse of acetal valve:

Retention Time	Base Peak	Base Peak Area	Blank Base Peak Area	Base peak-blank peak	Name
3.26	90.96	15328361	36097520	-20769159	glyceraldehyde
4.27	87.02	8873118	10444512	-1571394	dimethoxybutane
5.53	101.08	609269		609269	
7.73	57	7505696	265621	7240075	1,3-dioxolan-2-one,4-methyl, propylene carbonate
7.92	57.06	2577886		2577886	1,3-dioxolan-2-one,4-methyl, propylene carbonate
9.82	57.07	9790466	11206750	-1416284	undecane
12.07	140.99	2469185	n		cyclohexane, isothiocyanate
13.1	73.01	4262592	2889223	1373369	cyclohexasiloxane, dodecamethyl
16.86	186	2393652	195729	2197923	diphenyl sulfide
17.18	169.02	1794541	n		benzenamine, N-phenyl?
18.18				0	?
18.39				0	?
20.61	194	9547422	n		Acridine, 9,10-dihydro-3,3-dimethyl
22.67	202.02	1127364	n		naphthalene

Ethyl Acetate Rinse of Acetal Valve:

Ethyl Acetate		Base Peak Area	Blank		

3.28	43	1050728598		1050728598	ethyl acetate
3.4	43	118932092		118932092	isopropyl acetate
3.53	43	243862971		243862971	methly-2methylpropanoate
3.62	59	85470932	7914231	77556701	butane, 1-ethoxy
3.65	57.06	33800823	27556820	6244003	trans-1-ethoxy-butene
3.96	57.09	27281546	76628	27204918	hexane, 2,5-dimethyl
4.38	69.04	47544082	33834787	13709295	2-hexene, 2,5-dimethyl
7.68	43.01	2774157	545003	2229154	2-pentanone
7.92	57.06	789799	3842260	-3052461	1,3-dioxolan-2-one,4-methyl, propylene carbonate
8.59	89.04	167203	n		?
8.8	42.96	8290130	5076316	3213814	propanoic acid, 3-ethoxy-,ethylester
10.56	73	807590	310592	496998	cyclopentasiloxane, dodecamethyl
12.05	55	700146	n		cyclohexane, isothiocyanate
13.1	73	1156626	160721	995905	cyclohexasiloxane, dodecamethyl
15.13	76.02	496003	n		1H-indole-1,3(2H)-dione
15.89	72.01	431091	n		?
16.86	186	303949	1331267	-1027318	dibenzothiophene, 1,4-dihydro?
17.18	169	2070426	n		1H-indole, 3-(1,3-butdienyl)-, E-
18.16	87.97	1082868	n		propyl N,N- dimethyldithiocarbamate
20.61	194	9367933	n		Acridine, 9,10-dihydro-3,3-dimethyl
21.5	187.02	664078	n		1,3,5-triazine-2,4-diamine, 6-phenyl
22.67	202	1301044	n		naphthalene
22-26					alkanes

Hexane Rinse of Acetal Valve

Hexane		Base Peak Area	Blank area		
3.1	83.89	1391194468		1391194468	hexane
3.4	56	4407195	3177917	1229278	furan, tetrahydro-2,5-dimethyl
3.52	56.12	4863155	n		furan, tetrahydro-2,5-dimethyl
3.72	41	n	n		hydroperoxide, hexyl
4.03	73.07	1988548	1080112	908436	3-hexanol, 2,4-dimethyl
4.34	71.03	2584740	2344781	239959	furan of some sort?
4.39	43	n			2H-pyran, 3,4-dihydro-6-methyl-

4.53	43	12802217	8049788	4752429	3-hexanone
6.86	43	50777982	18744577	32033405	pentanal, 2,2-dimethyl
7.2	43	28956889	10612034	18344855	hydroperoxide, 1-ethylbutyl
7.36	43	33524548	11440789	22083759	hydroperoxide, 1-methylbutyl
7.61	83	114820145	42932381	71887764	oxalic acid, cyclohexyl pentyl ester
8.03	83	488032	2775847	-2287815	?
8.22	55	2075360	839912	1235448	nitro cyclohexane?
15.01	70	628440	982155	-353715	doublepeak?
16.86	186	430344	3140776	-2710432	dibenzothiophene, 1,4-dihydro?
17.18	169	836410	n		1H-indole, 3-(1,3-butdieryl)-, E-
20.61	194	2281640	n		Acridine, 9,10-dihydro-3,3-dimethyl
20.91	88	732936	n		?
21.73	115.99		n		carbamodithioc acid, diethyl-,propyl ester
22.67	202	600196	n		naphthalene
22-33	57			0	alkanes
22.88	57	238003		238003	
23.76	57	779555		779555	
24.6	57	2846583		2846583	
25.41	57	6915010		6915010	
26.2	57	12180517		12180517	
26.96	57	15956901		15956901	
27.75	57	15274250		15274250	
28.66	57	16002303		16002303	
29.73	57	11362207		11362207	
31	57	7293528		7293528	
32.52	57	4500611		4500611	
34.37	57	3100184		3100184	