



This is an actual analysis report from MPR

Although this is a DEA sample, MPR processes many types of solvents and removes the contaminants that hinder your system's performance.

Sample Information

Company:	Refinery	Sample Number:	MPR90000
Location:		Sample Date:	**/**/****
System Name:	Lean DEA	Received Date:	**/**/****
Amine:	DEA from Refinery Mol. Wt. =105.14	Completion Date:	**/**/****
Company ID:	MPR Reclaim, System Sample	System Volume:	946.35m3

Solvent Components	Units	Initial	Final	Units	Initial	Final
Total Amine Bases	%(m) as DEA	40.46	40.34%	Water by KF	%(m)	52.22% 58.18%
Total DEA	%(m) as DEA	39.11	38.98%			
Free DEA	(m)	36.20%	37.77%			
Bound DEA	(m)	2.91%	1.20%	Bound DEA Observed	%(m)	3.20% 1.3%

Solvent Impurities	Units	Initial	Final	Units	Initial	Final
Heat Stable Salt Anions	ppm(m)	13596	4950	Formyl DEA (HPLC)	(m)	4.56% 0.94%
Heat Stable Salt Anions	as DEA	3.06%	1.12%	HEOD (HPLC)	(m)	<0.01% <0.01%
HSAS	as DEA	2.76%	0.84%	Amino Acids, total	as Bicine (m)	0.26% 0.213%
HSS/Total Amine	mol/mol	0.0782	0.0289	Bicine	(m)	0.09% <0.0001
				THEED	(m)	0.02% 0.06%
Strong Cations	ppm(m) as Sodium	651	630	bis-HEP	(m)	0.42% 0.42%
Petroleum Hydrocarbons	ppm(m)	36	3	H ₂ S	mol/mol	0.0033 0.0087
Suspended Solids	mg/L	167	114	CO ₂	mol/mol	0.0004 0.0007
				Total Lean Loading	mol/mol	0.0037 0.0094

Heat Stable Salt Anion

Speciation	Units	Initial	Final	Units	Initial	Final
<u>Weak Acid Anions</u>	@ avg MW =46.72			<u>Strong Acid Anions</u>		
Glycolate	ppm(m)	278	32	Oxalate	ppm(m)	<10 <10
Formate	ppm(m)	11598	3995	Nitrate	ppm(m)	<10 <10
Acetate	ppm(m)	427	41	Chloride	ppm(m)	82 40
Propionate	ppm(m)	115	<10	Thiocyanate	ppm(m)	912 79
Butyrate	ppm(m)	<10	<10	Sulfate	ppm(m)	179 338
Ferrocyanate	ppm(m)	<10	<10	Sulfite	ppm(m)	0 0
				Thiosulfate	ppm(m)	276 425
Total Weak Anions	ppm(m)	12418	4069	Total Strong Anions	ppm(m)	1448 882
Unspeciated Anions	ppm(m)	0	0			

Physical Properties	Initial	Final	Initial	Final
pH	10.3	10.47	118.00	26.00 ml
Viscosity	6.66 cP	5.27 cP @ 22 °C	14.00	4.60 seconds
Density	1.071 g/mL	1.055 g/mL	5.00	1.00 (See foaming scale below)
Conductivity	4.24 mS	2.35 mS		
Appearance of initial	turbid green liquid with many particles and H ₂ S odor with a sheen indicative of hydrocarbons			
Appearance of final	clear light grey liquid with no particles and sewer odor with nothing visible indicative of hydrocarbons			

Mass Balance 101.5 % Strong Cations/HSS, mol/mol 0.2561 OK
 na = not analysed
 nd = none detected

Foaming Potential Rating Scale
0-2 are probably not producing measurable symptoms unless there are equipment problems such as fouling, mechanical damage, etc.
3-4 are producing measurable symptoms in the testing equipment, and need to be watched.
5-6 are, based on past experience, marginal at best, and may need operational intervention such as antifoam addition or surfactant removal to stabilize the solution.
6-10 are "problem" solutions, and most likely need immediate operational intervention and/or surfactant removal to stabilize performance.