



R10306068

24590-HLW-N1D-HOP-P0007

Rev. 0

PLANT ITEM MATERIAL SELECTION DATA SHEET

HOP-HX-00002 & HOP-HX-00004 (HLW)

Silver Mordenite Preheater

- Design Inlet Temperature (°F) (hot side/cold side): 500/250
- Location: outcell

ISSUED BY
 RPP-WTP PDC
 [Signature]
 NIT DATE

Contents of this document are Dangerous Waste Permit affecting

Operating conditions are as stated on sheet 4

Operating Modes Considered:

- Equipment is maintainable.

Materials Considered:

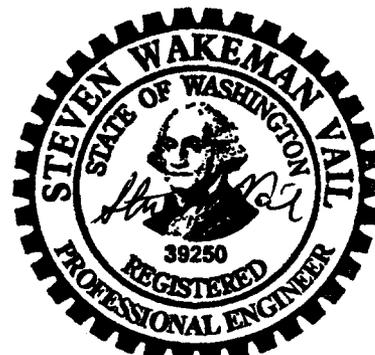
Material (UNS No.)	Relative Cost	Acceptable Material	Unacceptable Material
Carbon Steel	0.23		X
304L (S30403)	1.00		X
316L (S31603)	1.18	X	
6% Mo (N08367/N08926)	7.64	X	
Alloy 22 (N06022)	11.4	X	
Ti-2 (R50400)	10.1		X

Recommended Material: 316 (max 0.030% C; dual certified)

Recommended Corrosion Allowance: NA

Process & Operations Limitations:

- None



EXPIRES: 12/07/05

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This bound document contains a total of 4 sheets.

REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	APPROVER
0	4/21/04	Issued for Permitting Use	[Signature]	[Signature]	[Signature]

PLANT ITEM MATERIAL SELECTION DATA SHEET**Corrosion Considerations:****a General Corrosion**

The anticipated dry-air conditions are not conducive to general corrosion and none is expected.

Conclusion

Either 304L or 316L would be satisfactory.

b Pitting Corrosion

Pitting corrosion will only be a concern if moisture is present. It is assumed that there will be no condensation in the unit. For conservatism, 316L is recommended.

Conclusion

At the stated operating conditions, pitting corrosion is not a significant concern. Recommend 316L.

c End Grain Corrosion:

End grain corrosion only occurs in high acid conditions and is not a concern.

Conclusion:

Not a concern

d Stress Corrosion Cracking

At operations at the stated temperatures, stress corrosion cracking will only be a concern in the presence of moisture. It is assumed that there will be no condensation in the unit. Also see Pitting.

Conclusion

At the stated operating conditions, stress corrosion cracking is not a concern.

e Crevice Corrosion

Crevice corrosion will only be a concern if moisture is present. It is assumed that this will be prevented by the presence of a preheater.

Conclusion

At the stated operating conditions, crevice corrosion is not a concern.

f Corrosion at Welds

Assuming dry air and proper welding procedures, corrosion at welds is not anticipated.

Conclusion

At the stated operating conditions, weld corrosion is not a concern.

g Microbiologically Induced Corrosion (MIC)

The stated operating conditions are not suitable for microbial growth.

Conclusion

At the stated operating conditions, MIC is not a concern.

h Fatigue/Corrosion Fatigue

Extreme temperature cycling or fluctuations are not expected during normal operations. During the life of the equipment such fluctuation are expected to be very infrequent.

Conclusion

At the expected operating conditions, corrosion fatigue is not a concern.

PLANT ITEM MATERIAL SELECTION DATA SHEET**i Vapor Phase Corrosion**

Components essentially consist entirely of vapor space so general corrosion comments apply.

Conclusion:

See comments under general corrosion.

j Erosion

The velocity and solids content are sufficiently low that erosion is not a concern.

Conclusion

Erosion is not a concern.

k Galling of Moving Surfaces

There are no unlubricated moving surfaces present.

Conclusion:

Galling is not a concern.

l Fretting/Wear

No metal/metal contacting surfaces are expected.

Conclusion:

Fretting is not a concern.

m Galvanic Corrosion

No significantly dissimilar metals are present nor is moisture assumed to be present.

Conclusion:

Galvanic corrosion is not a concern.

n Cavitation

Cavitation is not expected in an off-gas system

Conclusion:

Cavitation is not a concern.

o Creep

Creep is not expected at stated operating conditions.

Conclusion

At the stated operating conditions, creep is not a problem.

PLANT ITEM MATERIAL SELECTION DATA SHEET

OPERATING CONDITIONS

Materials Selection Data

Component (Name/ID) HOP-HX-00002 & 4System HLW-HOP

Operations

Chemicals	Unit	Normal Case Conditions		Maximum Case Conditions	
		Cold Side	Hot Side	Cold Side	Hot Side
CO	ppmv	39.5	1.91	64.1	3.11
NO _x	ppmv	606	29.3	2,650	129
NH ₃	ppmv	67.6	109	60.7	290
SO ₂	ppmv	4.65E-02	2.26E-03	3.15E-02	1.53E-03
HCl	ppmv	3.76E-03	3.63E-06	2.27E-02	2.20E-05
HF	ppmv	2.17E-01	2.10E-04	1.77	1.72E-03
I ₂	ppmv	2.86E-09	2.76E-12	1.26E-04	1.22E-07
Hg	ppmv	2.26E-05	2.18E-05	9.86E-04	9.55E-04
SVOC	ppmv	5.48	2.64E-01	0.45	2.16E-02
VOC	ppmv	9.56E-08	1.71E-09	0.21	3.84E-03
Particulate	ppmv	3.07E-11	4.58E-12	8.46E-11	1.99E-11
Temperature (in/out)	°F	186/380	462/269	221/395	469/295