

PROPELLANT	HF	DENSITY	WEIGHT	MOLES	VOLUME
AP	-60.2100	1.9500	.5600	.0048	.2872
AL	.0000	2.7000	.1800	.0067	.0667
GAP	33.0000	1.3000	.2600	.0026	.2000

GRAM ATOMS/100 GRAMS

H	3.2185	O	2.1689	N	1.2638	CL	.4766	C	.7871	AL	.6671
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ENTHALPY = -20.03989      DENSITY = 1.806  
 CSTAR = 5244.43

	CHAMBER	THR(SHIFT)	EXH(SHIFT)
PRESSURE (PSIA)	300.000	173.920	14.700
EPSILON	.000	1.000	4.064
ISP	.000	106.242	233.742
ISP (VACUUM)	.000	200.742	266.206
TEMPERATURE(K)	3531.338	3358.524	2638.604
MOLECULAR WEIGHT	28.613	28.922	30.063
MOLES GAS/100G	3.495	3.458	3.326
CF	.000	.652	1.434
PEAE/M (SECONDS)	.000	94.500	32.464
GAMMA	1.178	1.176	1.169
HEAT CAP (CAL)	45.986	46.019	45.617
ENTROPY (CAL)	233.557	233.557	233.557
ENTHALPY (KCAL)	-20.040	-33.007	-82.804
DENSITY (G/CC)	2.01573E-03	1.24196E-03	1.38888E-04
ITERATIONS	11	3	8

GRAMS/100 GRAMS

H	.24978	.21980	.08135
H2	1.83575	1.86980	2.00271
HO	.75995	.58592	.10902
HO2	.00026	.00013	.00000
H2O	6.15620	6.07376	5.79197
H2O2	.00003	.00002	.00000
O	.11159	.07537	.00525
O2	.03566	.02347	.00151
HN	.00034	.00018	.00000
HNO	.00019	.00010	.00000
H2N	.00034	.00019	.00001
H3N	.00037	.00024	.00004
N	.00117	.00065	.00002
NO	.16404	.11387	.01202
NO2	.00002	.00001	.00000
N2	17.61141	17.63672	17.68713
N2O	.00003	.00001	.00000
CL2	.00383	.00298	.00061
CL	2.21602	2.03488	.88126
CLH	12.70135	13.39428	16.04864
CLHO	.00097	.00062	.00005
CLNO	.00002	.00001	.00000
CLO	.00199	.00119	.00005
HCOOH	.00003	.00002	.00000

CCLO	.00115	.00071	.00006
CHN	.00041	.00025	.00002
CHNO	.00004	.00003	.00000
CHO	.00147	.00088	.00006
CH2O	.00006	.00004	.00000
CN	.00002	.00001	.00000
CNO	.00001	.00000	.00000
CO	20.26459	20.26786	20.19300
CO2	1.57014	1.56682	1.68788
AL2O	.07494	.03660	.00022
AL2O2	.00825	.00405	.00002
AL	.06687	.03838	.00073
ALCL	2.41822	1.84635	.20627
ALCLO	.77653	.60399	.08134
ALCL2	.47060	.36119	.04969
ALCL3	.02896	.02483	.00776
ALH	.00678	.00342	.00004
ALHO	.00023	.00011	.00000
ALHO	.15441	.10500	.00718
ALHO2	.24422	.16586	.01211
ALN	.00001	.00000	.00000
ALO	.16088	.08935	.00157
ALO2	.00191	.00086	.00000
AL2	.00001	.00000	.00000
AL2O3/LIQ	29.75369	30.73142	33.08247

PROPELLANT	HF	DENSITY	WEIGHT	MOLES	VOLUME
AP	-60.2100	1.9500	.5600	.0048	.2872
AL	.0000	2.7000	.1800	.0067	.0667
GAP	33.0000	1.3000	.2600	.0026	.2000

GRAM ATOMS/100 GRAMS

H	3.2185	O	2.1689	N	1.2638	CL	.4766	C	.7871	AL	.6671
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ENTHALPY = -20.03989      DENSITY = 1.806  
 CSTAR = 5264.13

	CHAMBER	THR(SHIFT)	EXH(SHIFT)
PRESSURE (PSIA)	500.000	289.416	14.700
EPSILON	.000	1.000	5.942
ISP	.000	106.938	250.111
ISP (VACUUM)	.000	201.646	278.694
TEMPERATURE(K)	3591.790	3409.387	2505.433
MOLECULAR WEIGHT	28.811	29.104	30.300
MOLES GAS/100G	3.471	3.436	3.300
CF	.000	.654	1.529
PEAE/M (SECONDS)	.000	94.708	28.583
GAMMA	1.176	1.174	1.169
HEAT CAP (CAL)	46.056	46.078	45.437
ENTROPY (CAL)	230.021	230.020	230.021
ENTHALPY (KCAL)	-20.040	-33.177	-91.902
DENSITY (G/CC)	3.32583E-03	2.04875E-03	1.47424E-04
ITERATIONS	6	4	7

GRAMS/100 GRAMS

H	.22114	.19297	.04687
H2	1.85324	1.88631	2.02985
HO	.69639	.53075	.05345
HO2	.00028	.00014	.00000
H2O	6.22569	6.13126	5.77202
H2O2	.00004	.00002	.00000
O	.08928	.05916	.00149
O2	.02852	.01840	.00043
HN	.00043	.00022	.00000
HNO	.00024	.00012	.00000
H2N	.00050	.00028	.00001
H3N	.00061	.00040	.00005
N	.00119	.00066	.00001
NO	.15443	.10577	.00513
NO2	.00002	.00001	.00000
N2	17.61541	17.64017	17.69042
N2O	.00003	.00002	.00000
CL2	.00441	.00340	.00040
CL	1.97782	1.80083	.52181
CLH	12.95856	13.65406	16.53135
CLHO	.00116	.00073	.00003
CLNO	.00003	.00001	.00000
CLO	.00203	.00119	.00002
HCOOH	.00005	.00003	.00000

CCLN	.00001	.00000	.00000
CCLO	.00164	.00101	.00004
CHN	.00070	.00042	.00003
CHNO	.00008	.00004	.00000
CHO	.00212	.00124	.00004
CH2O	.00011	.00007	.00000
CN	.00003	.00001	.00000
CNO	.00001	.00001	.00000
CO	20.27056	20.27500	20.15464
CO2	1.55887	1.55396	1.74894
AL2O	.06799	.03269	.00003
AL2O2	.00797	.00364	.00000
AL	.05747	.03244	.00014
ALCL	2.31484	1.75507	.08160
ALCLO	.73266	.56564	.03428
ALCL2	.54991	.42057	.02774
ALCL3	.03992	.03428	.00706
ALH	.00727	.00361	.00001
ALHO	.00026	.00011	.00000
ALHO	.14891	.10032	.00254
ALHO2	.23362	.15709	.00435
ALN	.00001	.00000	.00000
ALO	.13862	.07557	.00031
ALO2	.00175	.00077	.00000
AL2	.00001	.00000	.00000
AL2O3/LIQ	29.89250	30.84429	33.24285

PROPELLANT	HF	DENSITY	WEIGHT	MOLES	VOLUME
AP	-60.2100	1.9500	.5600	.0048	.2872
AL	.0000	2.7000	.1800	.0067	.0667
GAP	33.0000	1.3000	.2600	.0026	.2000

GRAM ATOMS/100 GRAMS

H	3.2185	O	2.1689	N	1.2638	CL	.4766	C	.7871	AL	.6671
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ENTHALPY = -20.03989      DENSITY = 1.806  
 CSTAR = 5293.69

	CHAMBER	THR(SHIFT)	EXH(SHIFT)
PRESSURE (PSIA)	1000.000	576.062	14.700
EPSILON	.000	1.000	10.133
ISP	.000	107.991	269.320
ISP (VACUUM)	.000	202.775	293.829
TEMPERATURE(K)	3670.715	3473.930	2327.003
MOLECULAR WEIGHT	29.072	29.343	30.480
MOLES GAS/100G	3.440	3.408	3.281
CF	.000	.656	1.637
PEAE/M (SECONDS)	.000	94.784	24.508
GAMMA	1.174	1.172	1.171
HEAT CAP (CAL)	46.157	46.159	44.602
ENTROPY (CAL)	225.261	225.261	225.262
ENTHALPY (KCAL)	-20.040	-33.437	-103.365
DENSITY (G/CC)	6.56770E-03	4.03490E-03	1.59668E-04
ITERATIONS	7	3	8

GRAMS/100 GRAMS

H	.18498	.15935	.02029
H2	1.87641	1.90776	2.05323
HO	.60701	.45472	.01821
HO2	.00028	.00014	.00000
H2O	6.30527	6.19637	5.73364
H2O2	.00005	.00003	.00000
O	.06393	.04117	.00022
O2	.02038	.01277	.00006
HN	.00056	.00028	.00000
HNO	.00030	.00015	.00000
H2N	.00082	.00045	.00000
H3N	.00122	.00080	.00006
N	.00119	.00064	.00000
NO	.13923	.09343	.00142
NO2	.00002	.00001	.00000
N2	17.62137	17.64539	17.69224
N2O	.00004	.00002	.00000
CL2	.00527	.00401	.00020
CL	1.67195	1.50307	.23199
CLH	13.30137	13.99846	16.89246
CLHO	.00144	.00089	.00001
CLNO	.00004	.00002	.00000
CLO	.00202	.00115	.00000
HCOOH	.00011	.00006	.00000

CCLN	.00002	.00001	.00000
CCLO	.00265	.00160	.00002
CHN	.00142	.00085	.00003
CHNO	.00016	.00009	.00000
CHO	.00339	.00196	.00002
CH2O	.00022	.00013	.00000
CN	.00006	.00002	.00000
CNO	.00002	.00001	.00000
CO	20.27854	20.28470	20.08136
CO2	1.54242	1.53645	1.86562
AL2O	.05707	.02668	.00000
AL2O2	.00675	.00299	.00000
AL	.04513	.02477	.00001
ALCL	2.13752	1.59972	.01886
ALCLO	.66323	.50558	.00882
ALCL2	.66997	.50825	.01060
ALCL3	.06151	.05281	.00575
ALH	.00774	.00374	.00000
ALHO	.00028	.00012	.00000
ALHO	.13848	.09182	.00053
ALHO2	.21467	.14203	.00097
ALN	.00001	.00000	.00000
ALO	.10904	.05767	.00002
ALO2	.00148	.00063	.00000
AL2	.00001	.00000	.00000
AL2O3 (ALPHA)	.00000	.00000	4.30966
AL2O3/LIQ	30.11826	31.02425	29.01611