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        NASA-GLENN CHEMICAL EQUILIBRIUM PROGRAM CEA2, FEBRUARY 5, 2004
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     REFS: NASA RP-1311, PART I, 1994 AND NASA RP-1311, PART II, 1996

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### CEA analysis performed on Wed 04-Dec-2024 03:53:03

# Problem Type: "Rocket" (Infinite Area Combustor)

prob case=_____8015 ro equilibrium

# Pressure (1 value):
p,atm= 47.62
# Chamber/Exit Pressure Ratio (1 value):
pi/p= 180

# Oxidizer/Fuel Wt. ratio (1 value):
o/f= 2

# You selected the following fuels and oxidizers:
reac
fuel C8H16,1-octene    wt%=100.0000 rho,g/cc= 888.000
oxid O2(L)             wt%=100.0000

# You selected these options for output:
# short version of output
output short
# Proportions of any products will be expressed as Mass Fractions.
output massf
# Heat will be expressed as siunits
output siunits

# Input prepared by this script:/var/www/sites/cearun.grc.nasa.gov/cgi-bin/CEARU
N/prepareInputFile.cgi

### IMPORTANT:  The following line is the end of your CEA input file!
end

             THEORETICAL ROCKET PERFORMANCE ASSUMING EQUILIBRIUM

          COMPOSITION DURING EXPANSION FROM INFINITE AREA COMBUSTOR

Pin =   699.8 PSIA
CASE = _____

            REACTANT                    WT FRACTION      ENERGY      TEMP
                                         (SEE NOTE)     KJ/KG-MOL      K
FUEL        C8H16,1-octene               1.0000000         0.000      0.000
OXIDANT     O2(L)                        1.0000000    -12979.000     90.170

O/F=    2.00000  %FUEL= 33.333333  R,EQ.RATIO= 1.710973  PHI,EQ.RATIO= 1.710973

                CHAMBER   THROAT     EXIT
Pinf/P            1.0000   1.7533   180.00
P, BAR            48.251   27.521  0.26806
T, K             3448.22  3214.09  1458.92
RHO, KG/CU M    3.4319 0 2.1210 0 4.6495-2
H, KJ/KG         -270.41 -1029.10 -5233.78
U, KJ/KG        -1676.37 -2326.67 -5810.31
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G, KJ/KG	-42511.8	-40402.4	-23105.8
S, KJ/(KG)(K)	12.2502	12.2502	12.2502
M, (1/n)	20.392	20.595	21.040
(dLV/dLP)t	-1.01663	-1.01123	-1.00000
(dLV/dLT)p	1.2935	1.2115	1.0001
Cp, KJ/(KG)(K)	4.3185	3.7957	2.0561
GAMMAs	1.1646	1.1694	1.2380
SON VEL,M/SEC	1279.6	1231.8	844.8
MACH NUMBER	0.000	1.000	3.729

PERFORMANCE PARAMETERS

Ae/At	1.0000	17.835
CSTAR, M/SEC	1846.8	1846.8
CF	0.6670	1.7060
Ivac, M/SEC	2285.2	3333.7
Isp, M/SEC	1231.8	3150.7

MASS FRACTIONS

*CO	0.56794	0.56276	0.48255
*CO2	0.15341	0.16160	0.28768
COOH	0.00002	0.00001	0.00000
*H	0.00163	0.00120	0.00000
HCO	0.00005	0.00002	0.00000
HO2	0.00001	0.00000	0.00000
*H2	0.01875	0.01894	0.02499
H2O	0.23620	0.24172	0.20478
*O	0.00165	0.00079	0.00000
*OH	0.01855	0.01206	0.00000
*O2	0.00179	0.00089	0.00000

* THERMODYNAMIC PROPERTIES FITTED TO 20000.K

NOTE. WEIGHT FRACTION OF FUEL IN TOTAL FUELS AND OF OXIDANT IN TOTAL OXIDANTS