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# Better Defining the Uncertainties for the AGA-8 Equation

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## 1 - Executive Summary

In order to revise the AGA-8 documentation for publication in 2014, better knowledge of the 0.1% uncertainty level in the equation of state is needed. The 0.1% uncertainty level has been identified by an AGA-8 task group as the acceptable limit of error for density and compressibility factor calculations. With the availability of a new high-accuracy wide-range equation of state described in the introduction, it is now possible to locate regions within AGA-8 that are most likely outside the 0.1% uncertainty limit, which was not possible in 1992 due to limited experimental data.

Code was written to locate the 0.1% error between the AGA-8 equation of state and the new equation. Compositions of each of the 21 components allowed in AGA-8 were varied, first for binary pairs of the component with methane, then as multi-component mixtures with compositions less than that determined for the binary pairs. The upper limit for each fluid was slowly decreased until a point was found that appeared to be the best compromise between the highest possible concentration for each fluid but with the lowest acceptable uncertainty. These limits are given in Table 3 of this document. Table 3 will become part of the revised AGA-8 standard if approved by the task group.

A second set of acceptable composition limits for pressures less than 2 MPa was identified, and given in Table 4. This additional table will allow continued use of AGA-8 for low pressure applications for gases that otherwise would be outside the acceptable limits.

The work presented here will be discussed at the September, 2013, meeting of the AGA-8 task group, and final recommendations for the revised AGA-8 document will be made.

## 2 - Introduction

AGA-8[1] is currently being revised by an AGA task group to change a number of items since its publication more than 20 years ago. The coefficients in the DETAIL equation of state given in AGA-8 will not be changed, and thus the compressibility factors will remain the same, but the equation will be reported in its Helmholtz energy form so that speed of sound values and other thermodynamic properties can be calculated. The document will be split into two parts: Part 1 will describe the DETAIL method, and a new Part 2 will give all pertinent information required to implement the new wide-range equation of state by Kunz and Wagner (2012)[2], often referred to as the GERG-2008 equation of state.

A well-known figure in the natural gas industry is Figure 1 of the AGA-8 documentation (1992)[1] (also shown here as Figure 1), which defines states where the AGA-8 equation has an uncertainty in density of 0.1% or less for compositions given in Table 1. New equations and measurements of typical natural gas mixtures have shown that this figure and the associated compositions may overstate the bounds for which AGA-8 provides densities that fall within this level of uncertainty. With the availability of the new high-accuracy equation of state from Kunz and Wagner[2], states calculated from AGA-8 that are within 0.1% in density can be more completely characterized. Because Part 1 of AGA-8 will continue to be used within the industry in most lean natural gas systems (in part because the new equation to be given in Part 2 of the revised AGA-8 is perceived to be more complicated), it is important to know when the absolute

deviations between AGA-8 Parts 1 and 2 exceed the 0.1% level, which may be indicative of uncertainties in calculated densities greater than 0.1% in the DETAIL equation. This project defines the conditions at which the differences between the two equations become important. This will aid industry as it determines whether the equation in Part 1 of AGA-8 is still suitable for their flow meters and for other purposes. The information presented here gives new guidelines that indicate when the equation of state in Part 2 of the revised AGA-8 publication may be required for compliance with new national and international standards.

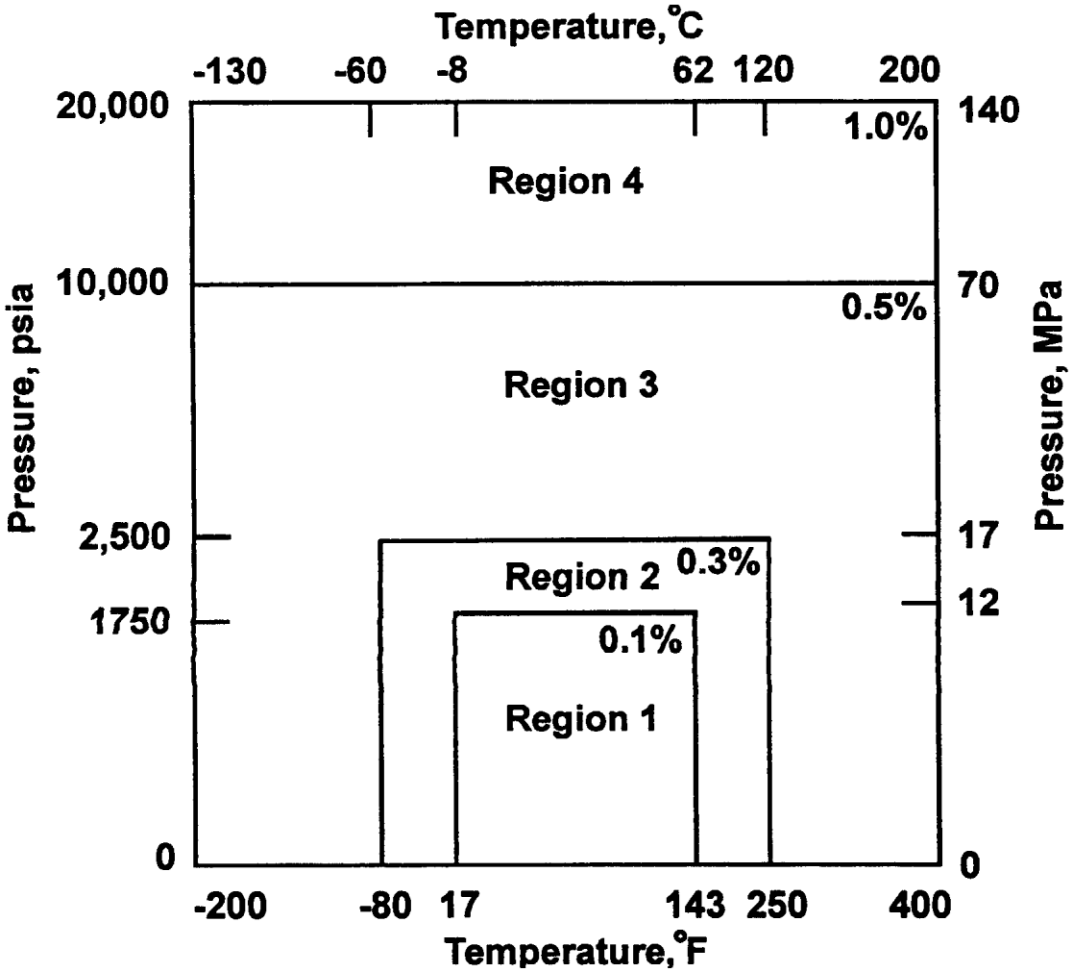


Figure 1. Targeted uncertainty for natural gas compressibility factors using the DETAIL characterization method as given in the 1992 publication of AGA-8.

## 3 - Value to Members

As the equation in Part 2 of the revised AGA-8 becomes one of the international standards for natural gas calculations, comprehensive comparisons with AGA-8 to document differences and establish uncertainties will help the industry stay current with other pipeline operators. This work will facilitate the trade of natural gas in accordance with the new standards, but will also allow industry the continued use of the original AGA-8 equation for most lean natural gas mixtures. This will avoid the necessity of replacing flow computers at thousands of

locations in order to implement a new standard. The tables and other information prepared in this work are anticipated to become part of the next revision of AGA-8. The new AGA-8 document will then be available to technicians for use in implementing natural gas calculations based on the appropriate equation of state for a given composition at specified state conditions.

This information allows operators to determine where existing flow measurement equipment can be retained (i.e., not replaced because of minimal impact on measurement uncertainty), or conversely should be replaced due to high measurement uncertainty. The ability to optimize equipment has the potential to save the industry millions in electronic flow measurement replacements.

## 4 - Implementation

The original work plan prescribed a method for calculating more than $10^6$ state points over a 19-parameter phase space (temperature, pressure, and 17 components) and locating the boundaries where this phase space showed deviations of less than 0.1% between the equations in Parts 1 and 2 of the revised AGA-8. As work progressed to calculate this phase space, new ideas were developed that would aid in the location of the 0.1% contour in order to derive solutions that engineers could use to determine whether the error in the original AGA-8 equation was acceptable. Rather than an initial computation of more than a million state points, followed by an analysis of the results, a method was developed to quickly view the 0.1% contour while systematically changing the compositions.

The method implements a general root finder for locating the state point where the error between the two equations reaches a certain value, including the possibility of finding the location of 0% error (where the two equations cross). In this work, the deviation is defined as the percent difference in density between the two models, with inputs of pressure and temperature. The deviation in compressibility factor is equal to the negative of the deviation in density. Because inputs of pressure and temperature require an iterative procedure to obtain the independent variable of density used in the equation of state, an alternative definition of the percent error in density was used. This method works by obtaining the error in pressure at a given temperature and density, and then dividing the error by the derivative of pressure with respect to density. The error values calculated in this way are slightly different (typically within 1%) from those obtained from the iterative calculation, but adequate for the evaluations required in this work.

The deviations between the two equations can be a complicated function of pressure. Unlike the simple calculation of pressure given the independent variables of density and temperature (which has a single root in the supercritical region of equations of state), the error between equations almost always has multiple roots, with highly variable slopes and curvatures even within small changes in density. Root finding routines that use the slope of the equation to find the root will often fail in such a situation because the zero slope at the maximum or minimum can cause the root finder to settle on a very high value as the next guess. For example, Figure 2 shows the absolute percent deviation between the two equations as a function of density for an isotherm. (The temperature or composition of the sample is not given here as the plot is used for demonstration only, as well as in the following figures). A root solving algorithm searching in the density area between 3.0 and 4.0 (also, the units of mol/dm$^3$ are not included in

the text here or shown on the plot) may calculate a zero slope at a density near 3.65, with a resulting next guess for density far beyond states shown in the graph.

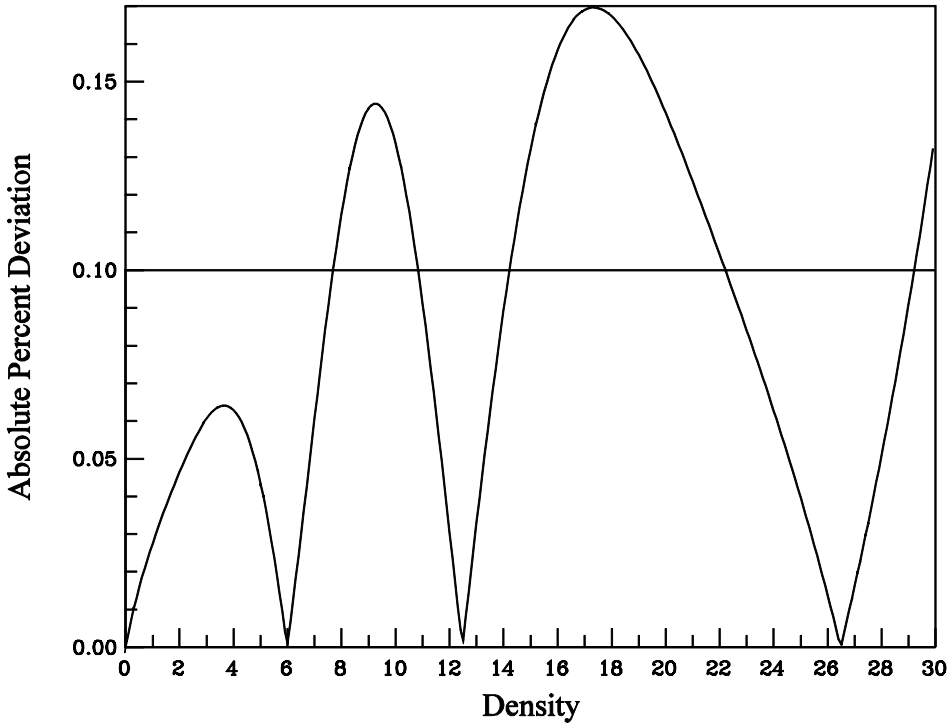


Figure 2. Absolute deviations in density between the equations in Parts 1 and 2 of the revised AGA-8 for a typical natural gas with the first occurrence of the 0.1% error at a density of 7.69 (Deviations in density are identical to negative deviations in compressibility factor).

Likewise, root solving routines that use a bounding solution may locate a state that is different from the first occurrence of the 0.1% error. Figure 2 shows that there are 5 densities where the absolute error is 0.1%. The root finding subroutine must find the first occurrence of this state, at a density of 7.69.

The initial design of the root finder involved a process of locating the first occurrence (at the lowest density) of a maximum (zero slope), which is 3.65 in Figure 2. If the error at this maximum is less than 0.1%, then the process continues by finding the point of zero error (at 5.97), and then the next maximum (at 9.24). Since the error at 9.24 is about 0.144%, the routine exits the loop and finds the 0.1% state between the zero error and the maximum, which has a value of about 7.69. Figure 3 shows a situation where the routine passes through two maximums before locating the appropriate maximum with an error greater than 0.1%, at a density of 16.5.

Although this routine worked well for many compositions, it failed for some cases, as shown in Figure 4 where a minimum in the plot occurred rather than a zero. After finding the first maximum at 6.3, the routine found the zero at 26.1, and then the 0.1% error at an even higher density (and pressure). The 0.1% value at 13.1 was not found. Figure 5 shows a situation with 2 local minima located at densities less than that of the 0.1% error state, and Figure 6 shows even more complicated issues that must be evaluated to find the correct root.

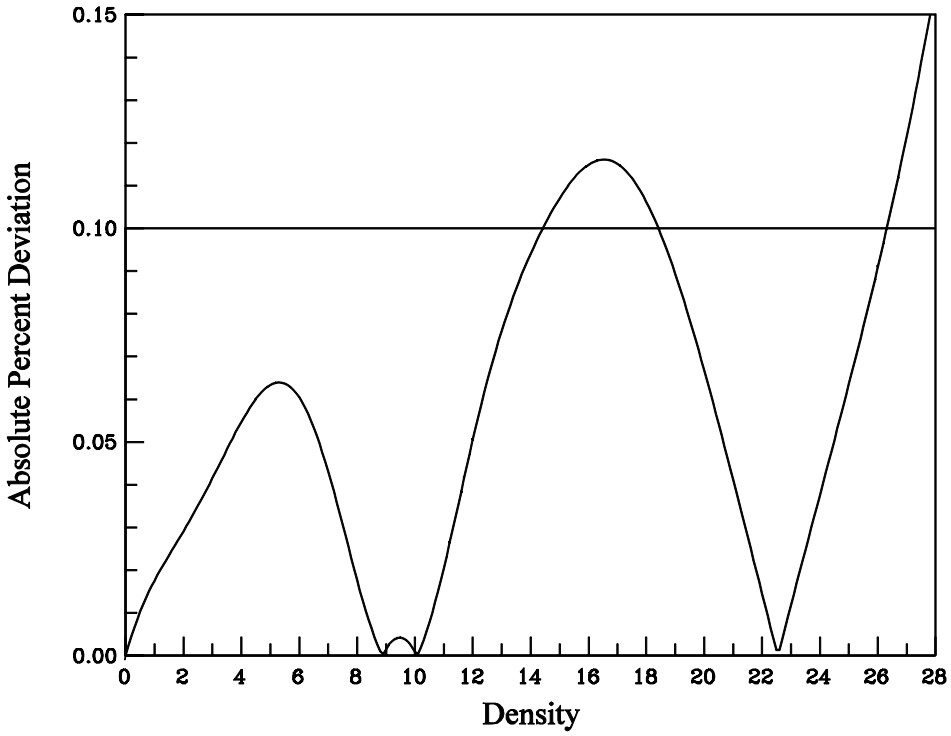


Figure 3. Absolute deviations in density between the equations in Parts 1 and 2 of AGA-8 for a typical natural gas showing a situation with two maximums before the 0.1% error.

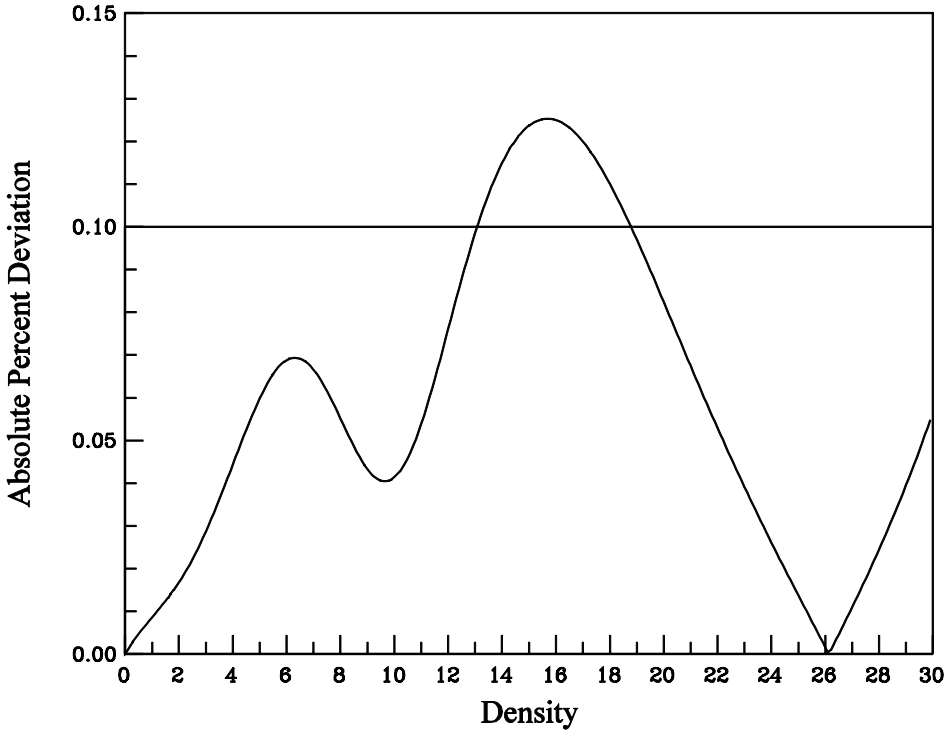


Figure 4. Absolute deviations in density between the equations in Parts 1 and 2 of AGA-8 for a typical natural gas where the error has a local minimum at a density of around 9.6.

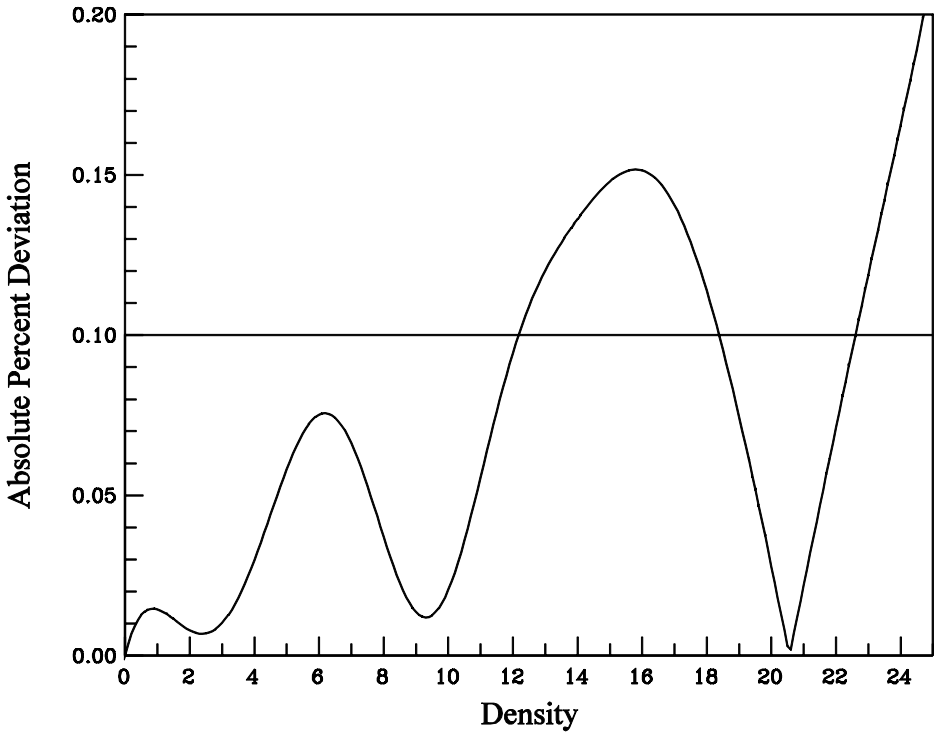


Figure 5. Absolute deviations in density between the equations in Parts 1 and 2 of AGA-8 for a typical natural gas with several local maxima and minima.

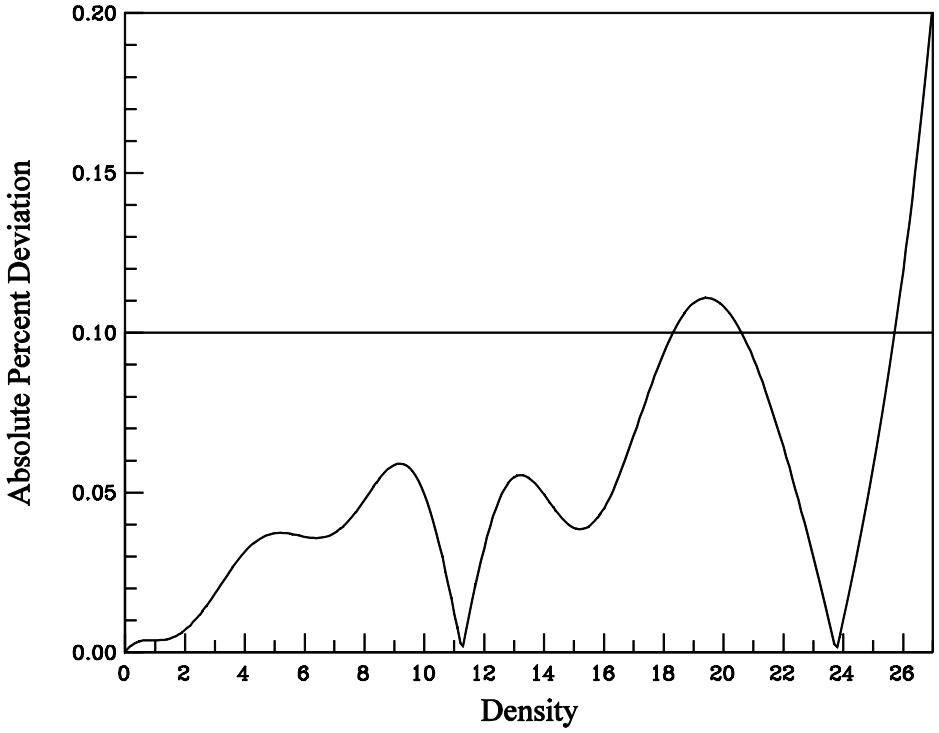


Figure 6. Absolute deviations in density between the equations in Parts 1 and 2 of AGA-8 for a typical natural gas with highly irregular behavior.

As the code grew and the number of calculated states increased (at least two or three points were required at each state to determine the slope of the surface), the method slowed to an unacceptable speed. A second root finding algorithm was written, working with a different principle for locating the first root. This routine divides the density regime into smaller and smaller parts, dropping out areas not needed as it finds certain states. The routine starts by calculating the error at a density of 64 mol/dm$^3$, and then dividing the area into two (at 32), and calculating the error at this position. If the error at 32 mol/dm$^3$ is greater than 0.1%, deviations above this density are no longer needed. The routine continues by dividing the two areas in half, at 16 and 48, and calculates the deviations. The next division of each area results in calculations at 8, 12, 40, and 56 mol/dm$^3$. This process is repeated 8 times, with the possibility of 256 calculations. Because most states with the 0.1% error lie below 10 mol/dm$^3$, approximately 40 calculations were often sufficient to locate the correct state.

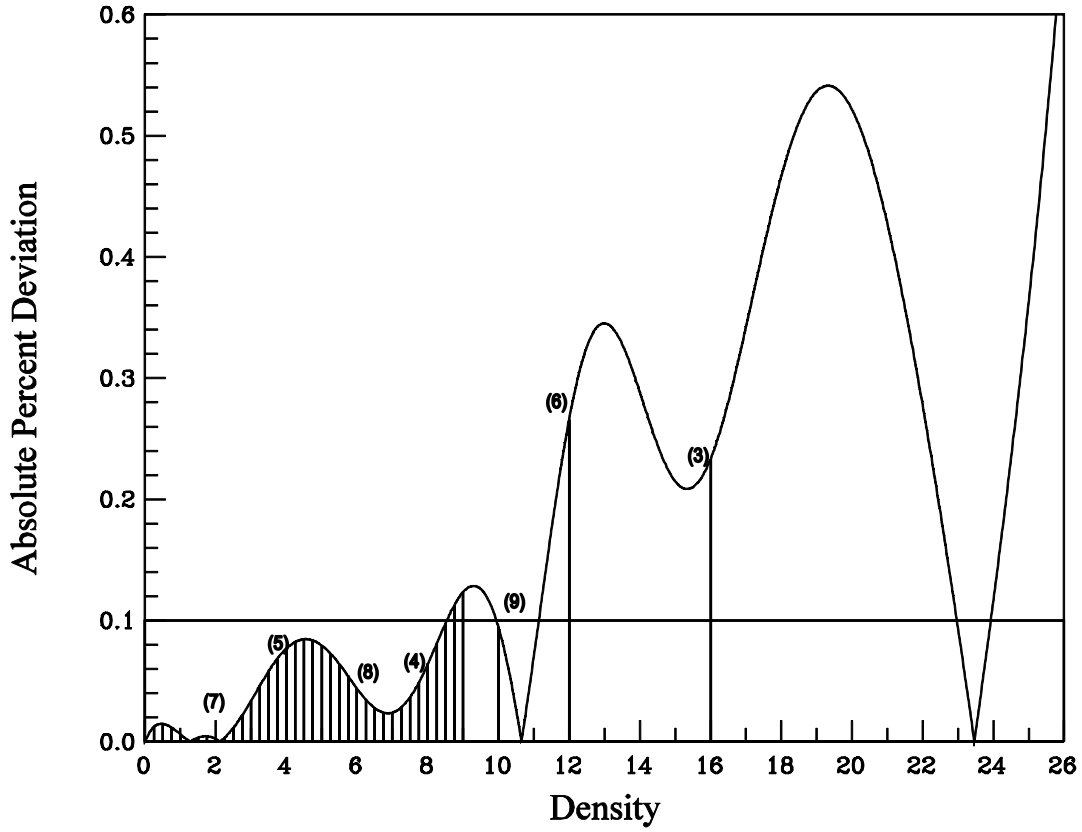


Figure 7. Absolute deviations in density between the equations in Parts 1 and 2 of AGA-8 for a typical natural gas. The vertical lines show where calculations are made in the root solving algorithm. The numbers in parenthesis show the order of calculation up to the 9$^{th}$ point (the first two calculated points are beyond the x-axis upper limit).

Figure 7 shows an example where the errors at 12, 16 and 32 mol/dm$^3$ exceed 0.1%. After calculating the error at 12, all densities at higher values can be excluded from additional calculations. The error at 8 is less than 0.1%, so the area between 8 and 12 mol/dm$^3$ is split in half, finding an error at 10 less than 0.1%, and thus the density at 12 still remains as the upper limit required to find the lowest state. The next round of splitting involves the densities at 1, 3,

5, 7, 9, and 11 mol/dm$^3$, but the error of 0.123% at 9 stops the calculation of states above this density. This is the last state found with a density greater than 0.1%. After all the states shown in Figure 7 are calculated, the root solver is called with an initial value of 8.75 mol/dm$^3$, resulting in a final value of 8.54 mol/dm$^3$ for the first occurrence of the 0.1% error.

One could imagine building a "fast" algorithm that used the solution from the algorithm at a particular isotherm in the calculation of a subsequent isotherm, but this routine would fail when a new area of errors greater than 0.1% appeared. For example, in Figure 4, the 0.1% error at a density of 13 could be used as a starting point for the next isotherm. If the maximum at 6.3 increases to the point where it exceeds 0.1%, the error would not be detected, and the output in the algorithm would give the wrong result. Thus, the final solution used in this work required the area splitting method described above for all isotherms.

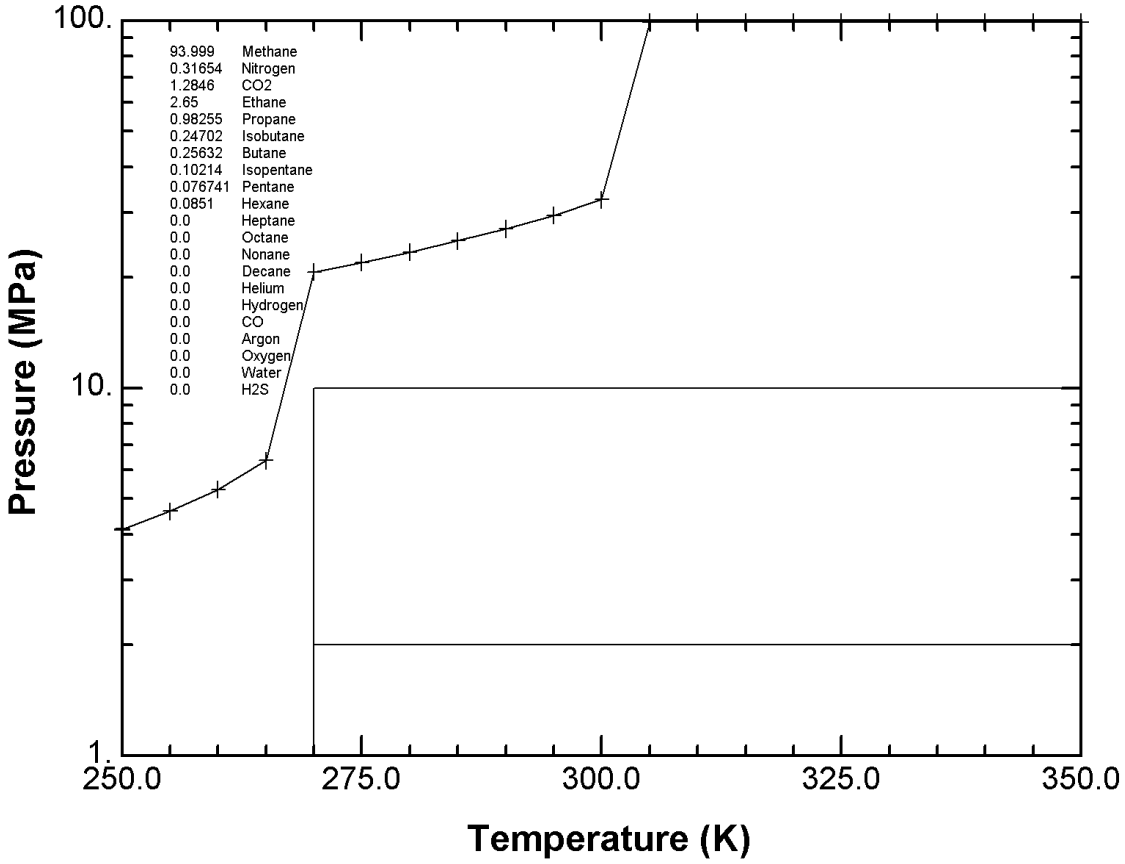


Figure 8. Example output of the interface that displays the 0.1% contour of any input natural gas sample. The various lines shown on the plot are explained in the text. The gas composition is identical to Gas #154 in the Appendix.

A graphical program that called the new Fortran routines described above (which in turned called routines in the REFPROP software[3]) was written to allow a user to quickly view the 0.1% contour for any composition. Figure 8 shows a typical output of the program. Temperature is given on the x-axis, and pressure on the y-axis. The line with the plus symbols represents the 0.1% contour. The compositions of each component except methane can be

adjusted up or down with 3 different increments of 1%, 0.1%, or 0.01%. Methane is always calculated as 100% minus the sum of the other components. The compositions of the mixture are written within the plot.

The work of locating a new allowable range of compositions began by varying the composition of each fluid keeping all others zero (thus creating a binary mixture with methane) to determine the maximum amount of the fluid that would be allowed. These limits are given in Table 2. Multicomponent mixtures were then created by increasing the compositions of different components to visualize how the additional amount of a fluid changed the location of the contour (i.e., the pressure for a 0.1% error at a given temperature). Generally the increase of a constituent in the mixture would lower the contour, especially with the higher alkanes, indicating increased error as the composition increased. For $CO_2$, nitrogen, or ethane, certain composition regimes would instead move the contour to higher pressures (thus lower errors), making it more difficult to define ranges where the errors remained below 0.1%.

The ranges shown in Table 3 were eventually determined to be the best compromise between the highest possible concentration for each fluid but with the lowest acceptable uncertainty. The upper limit of the $CO_2$ composition was quite dependent on the other fluids in the mixture. In order to keep the upper limit of 30% the same as the 1992 edition of AGA-8, several conditions were added that indicated when the upper limit should be decreased. These conditions are listed at the bottom of Table 3.

The contour would often jump between low and high pressures in the range between 250 K and 270 K for many mixtures, due to a smaller loop in the deviations that generally did not exceed 0.1% except at low temperatures as shown in Figure 8. The area bounded from 270 K to 350 K with pressures less than 10 MPa is shown in this figure, as well as a second area bounded with the same temperatures but with an upper pressure limit of 2 MPa. Because some of the limits of applicability for the AGA8 equation have been decreased by this work, a second area of applicability for gases with higher concentrations of many key components was located for applications with the lower pressure. This will permit continued use of the AGA8 equation for many applications that otherwise might have been excluded. Table 4 shows the higher acceptable composition ranges for the lower pressure limit.

It is rare that a mixture would have a composition that is within the valid limits but where the composition of each fluid is near the allowable maximum. The 0.1% error for a natural gas with this composition is (unacceptably) well within the 270 K to 350 K range with pressures below 10 MPa. In order to verify that this situation does not commonly occur, compositions for 200 natural gas mixtures found within pipelines and other industrial settings, which were recently collected from a variety of companies for a different project, were tested. The program was modified to load these mixtures, and display the error contour for each mixture, one at a time. Of the 200, all but three showed correct identification of an acceptable mixture with the new tolerances given in Table 3, and the error for the three with the wrong identification only passed slightly into the bounded region at 270 K and 10 MPa. The 200 gas compositions are listed in the Appendix; the three outliers are gases #54, #62, and #121. Figures 8 and 9 show two samples, one that falls within the acceptable composition limits and one that does not.

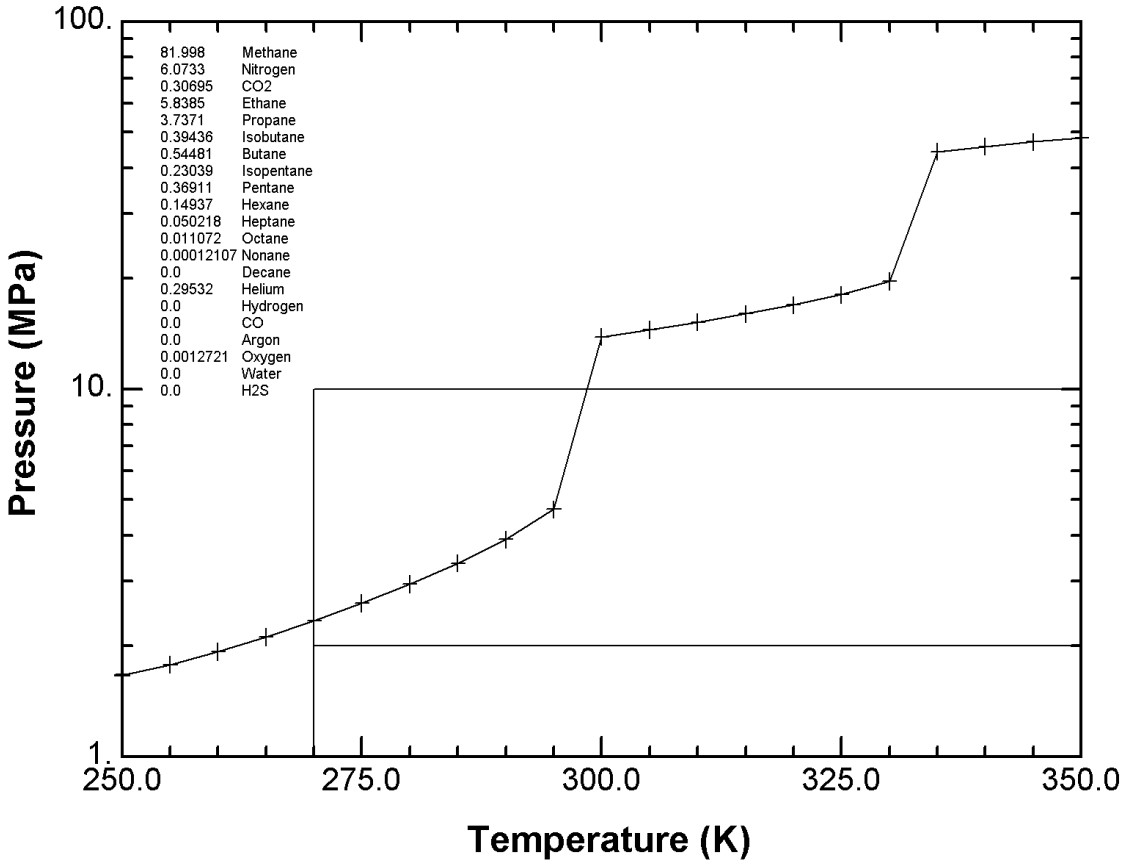


Figure 9. Example output of the interface for a natural gas with a composition outside the acceptable limits in Table 3 (but within those given in Table 4). The output shows that the 0.1% contour lies within the 270 K to 350 K range with pressures less than 10 MPa, but not with the range with pressures less than 2 MPa. The gas composition is identical to Gas #56 in the Appendix.

## 5 - Conclusions

Routines were written to access the calculations available in the REFPROP software[3] for calculating densities (and compressibility factors) of natural gases, for both the AGA-8 equation of state[1] and the new equation of state of Kunz and Wagner[2]. Density values were compared, and states where the difference between the two equations exceeded 0.1% were located. These states were used to define new composition limits of applicability for AGA-8, as given in Table 3. These new limits will become part of the revised AGA-8 documentation after review (and possible modification) of the AGA-8 task group.

The interface used to develop the ranges listed in Tables 3 and 4 is available from the author upon request, and will most likely be further developed and made publically available as the AGA-8 document is revised and published. Because it is impossible to describe all situations where one might exceed the 0.1% error limit, many users may wish to use the program when their compositions exceed those in Table 3 to identify whether the mixture is still within their

prescribed uncertainty threshold. Version 9.1 of the Refprop program (www.nist.gov/srd/nist23.cfm) can also be used to plot the differences between the two equations. In order for the options to appear, the user must first select the item labeled "Show menus to graph deviations between AGA8 and GERG" in the Options/Preferences menu item. Four new items under the Plot option will then appear, allowing the user to plot the percent deviation in density, compressibility factor, isobaric heat capacity, or speed of sound for various isobars.

## 6 - References


1. **Starling, K.E. and Savidge, J.L.**, *Compressibility Factors of Natural Gas and Other Related Hydrocarbon Gases*, Transmission Measurement Committee Report No. 8, Catalog No. XQ9212, American Gas Association, 1992.

2. **Kunz, O. and Wagner, W.** *The GERG-2008 Wide-Range Equation of State for Natural Gases and Other Mixtures: An Expansion of GERG-2004*. J. Chem. Eng. Data, 57(11):3032-3091, 2012.

3. **Lemmon, E.W., Huber, M.L., and McLinden, M.O.** *NIST Standard Reference Database 23: Reference Fluid Thermodynamic and Transport Properties-REFPROP*, Version 9.1, National Institute of Standards and Technology, Standard Reference Data Program, Gaithersburg, 2013.

Table 1. Ranges of composition allowed by the 1992 AGA-8 publication for temperatures from –8 °C to 62 °C with pressures to 12 MPa

| | |
|---|---|
| Mole Percent Methane | 45.0 to 100.0 |
| Mole Percent Nitrogen | 0 to 50.0 |
| Mole Percent Carbon Dioxide | 0 to 30.0 |
| Mole Percent Ethane | 0 to 10.0 |
| Mole Percent Propane | 0 to 4.0 |
| Mole Percent Total Butanes | 0 to 1.0 |
| Mole Percent Total Pentanes | 0 to 0.3 |
| Mole Percent Hexanes Plus | 0 to 0.2 |
| Mole Percent Helium | 0 to 0.2 |
| Mole Percent Hydrogen | 0 to 10.0 |
| Mole Percent Carbon Monoxide | 0 to 3.0 |
| Mole Percent Argon | 0 |
| Mole Percent Oxygen | 0 |
| Mole Percent Water | 0 to 0.05 |
| Mole Percent Hydrogen Sulfide | 0 to 0.02 |

Table 2. Ranges of composition for which a binary mixture of the fluid with methane shows errors less than 0.1% between the equations in Parts 1 and 2 of the revised AGA-8 for temperatures from 270 K to 350 K with pressures to 10 MPa

| | |
|---|---|
| Mole Percent Nitrogen | 0 to 100.0 |
| Mole Percent Carbon Dioxide | 0 to 38.0 |
| Mole Percent Ethane | 0 to 20.0 |
| Mole Percent Propane | 0 to 6.0 |
| Mole Percent Isobutane | 0 to 0.4 |
| Mole Percent Butane | 0 to 1.0 |
| Mole Percent Isopentane | 0 to 0.3 |
| Mole Percent Pentane | 0 to 0.5 |
| Mole Percent Hexane | 0 to 0.3 |
| Mole Percent Heptane | 0 to 0.05 |
| Mole Percent Octane | 0 to 0.04 |
| Mole Percent Nonane | 0 to 0.03 |
| Mole Percent Decane | 0 to 0.03 |
| Mole Percent Helium | 0 to 1.0 |
| Mole Percent Hydrogen | 0 to 100.0 |
| Mole Percent Carbon Monoxide | 0 to 23.0 |
| Mole Percent Argon | 0 to 3.0 |
| Mole Percent Oxygen | 0 to 1.0 |
| Mole Percent Water | 0 to 0.07 |
| Mole Percent Hydrogen Sulfide | 0 to 1.0 |

Table 3. Ranges of composition for which most typical natural gases show errors less than 0.1% between the equations in Parts 1 and 2 of AGA-8 for temperatures from 270 K to 350 K with pressures up to 10 MPa

| | |
|---|---|
| Mole Percent Methane | 0 to 100.0 |
| Mole Percent Nitrogen | 0 to 50.0 |
| Mole Percent Carbon Dioxide | 0 to 30.0* |
| Mole Percent Ethane | 0 to 10.0 |
| Mole Percent Propane | 0 to 4.0 |
| Mole Percent Isobutane | 0 to 0.4 |
| Mole Percent Butane | 0 to 0.6 |
| Mole Percent Isopentane | 0 to 0.3 |
| Mole Percent Pentane | 0 to 0.3 |
| Mole Percent Total Pentanes | 0 to 0.3 |
| Mole Percent Hexane | 0 to 0.12 |
| Mole Percent Heptane | 0 to 0.04 |
| Mole Percent Octane | 0 to 0.03 |
| Mole Percent Nonane | 0 to 0.03 |
| Mole Percent Decane | 0 to 0.03 |
| Mole Percent Hexanes Plus | 0 to 0.15 |
| Mole Percent Heptanes Plus | 0 to 0.04 |
| Mole Percent Helium | 0 to 0.4 |
| Mole Percent Hydrogen | 0 to 10.0 |
| Mole Percent Carbon Monoxide | 0 to 10.0 |
| Mole Percent Argon | 0 to 0.2 |
| Mole Percent Oxygen | 0 to 0.2 |
| Mole Percent Water | 0 to 0.05 |
| Mole Percent Hydrogen Sulfide | 0 to 0.1 |

* The upper limit for the mole fraction of $CO_2$ is reduced under the following conditions:
$x_{CO2,max} = 20\%$ if $x_{N2} > 7\%$
$x_{CO2,max} = 10\%$ if $x_{N2} > 15\%$
$x_{CO2,max} = 7\%$ if $x_{C3} > 1\%$
$x_{CO2,max} = 5\%$ if $x_{C3} > 2\%$
$x_{CO2,max} = 10\%$ if $x_{iC4} > 0.1\%$
$x_{CO2,max} = 10\%$ if $x_{C4} > 0.3\%$

Table 4. Ranges of composition for which most typical natural gases show errors less than 0.1% between the equations in Parts 1 and 2 of the revised AGA-8 for temperatures from 270 K to 350 K with pressures up to 2 MPa

| | |
|---|---|
| Mole Percent Methane | 0 to 100.0 |
| Mole Percent Nitrogen | 0 to 50.0 |
| Mole Percent Carbon Dioxide | 0 to 80.0 |
| Mole Percent Ethane | 0 to 25.0 |
| Mole Percent Propane | 0 to 6.0 |
| Mole Percent Isobutane | 0 to 1.5 |
| Mole Percent Butane | 0 to 6.0 |
| Mole Percent Total Pentanes | 0 to 2.0 |
| Mole Percent Hexane | 0 to 0.2 |
| Mole Percent Heptane | 0 to 0.2 |
| Mole Percent Octane | 0 to 0.2 |
| Mole Percent Nonane | 0 to 0.2 |
| Mole Percent Decane | 0 to 0.2 |
| Mole Percent Helium | 0 to 5.0 |
| Mole Percent Hydrogen | 0 to 100.0 |
| Mole Percent Carbon Monoxide | 0 to 10.0 |
| Mole Percent Argon | 0 to 3.0 |
| Mole Percent Oxygen | 0 to 1.0 |
| Mole Percent Water | 0 to 1.4 |
| Mole Percent Hydrogen Sulfide | 0 to 4.0 |

# Appendix

| Gas | C1 | N2 | CO2 | C2 | C3 | iC4 | C4 | iC5 | C5 | C6 | C7 | C8 | C9 | C10 | H2S | He | H2O | O2 | Ar | H2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.9600 | 0.9200 | 45.3200 | 0.9600 | 0.6100 | 0.4900 | 0.4800 | 0.0700 | 0.1900 | 0.0400 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 49.9600 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 2 | 1.1130 | 0.0000 | 19.1850 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 79.7020 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 3 | 9.1545 | 0.4179 | 87.9136 | 1.3369 | 0.6735 | 0.0449 | 0.1972 | 0.0487 | 0.0656 | 0.0541 | 0.0635 | 0.0158 | 0.0065 | 0.0016 | 0.0000 | 0.0000 | 0.0000 | 0.0022 | 0.0000 | 0.0000 |
| 4 | 9.4880 | 1.6470 | 86.5360 | 1.7340 | 0.4010 | 0.0290 | 0.0930 | 0.0140 | 0.0200 | 0.0180 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0200 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 5 | 17.8355 | 29.0095 | 0.5025 | 12.3511 | 20.5008 | 3.6887 | 9.5780 | 2.1214 | 2.2217 | 0.8547 | 0.4107 | 0.0918 | 0.0043 | 0.0001 | 0.0000 | 0.0000 | 0.0000 | 0.8115 | 0.0000 | 0.0000 |
| 6 | 18.3306 | 79.0492 | 0.1350 | 0.3805 | 0.0432 | 0.0000 | 0.0005 | 0.0002 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 2.0608 | 0.0000 | 0.0000 |
| 7 | 20.0000 | 1.9900 | 29.4580 | 7.9700 | 19.9000 | 2.1000 | 2.1000 | 1.0400 | 1.0300 | 0.3120 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 14.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1000 | 0.0000 |
| 8 | 21.2000 | 7.7400 | 64.5369 | 0.5120 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 5.0900 | 0.6290 | 0.0000 | 0.0000 | 0.2520 | 0.0000 |
| 9 | 24.7710 | 64.6150 | 1.1490 | 1.8350 | 1.4150 | 0.3230 | 0.7670 | 0.2850 | 0.3530 | 0.7180 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 3.4860 | 0.0000 | 0.2830 | 0.0000 | 0.0000 |
| 10 | 32.0950 | 0.3900 | 3.3400 | 21.2400 | 22.5350 | 2.7630 | 8.4150 | 2.2170 | 3.1010 | 3.8950 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0090 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 11 | 32.8041 | 1.3411 | 6.8507 | 21.4220 | 17.7536 | 2.3134 | 5.9043 | 1.3381 | 1.3033 | 1.6911 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 7.2782 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 12 | 45.4730 | 3.5050 | 9.4980 | 14.6760 | 13.7490 | 1.9330 | 5.1640 | 1.5070 | 1.3070 | 0.7380 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 2.4500 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 13 | 47.6175 | 45.5603 | 0.0699 | 2.8164 | 2.0412 | 0.3252 | 0.7933 | 0.1772 | 0.2279 | 0.0932 | 0.1019 | 0.1015 | 0.0570 | 0.0078 | 0.0000 | 0.0000 | 0.0000 | 0.0009 | 0.0000 | 0.0000 |
| 14 | 48.2400 | 2.5870 | 6.1420 | 19.7730 | 13.0150 | 1.7360 | 4.0060 | 0.9760 | 0.9220 | 1.1900 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 1.4000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 15 | 56.2550 | 1.5290 | 4.1720 | 14.4620 | 8.1900 | 1.1550 | 3.9650 | 0.9450 | 1.1910 | 0.5580 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 7.5780 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 16 | 61.8360 | 32.9200 | 0.0400 | 2.5850 | 1.2270 | 0.1490 | 0.2910 | 0.0620 | 0.0530 | 0.0720 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.7210 | 0.0000 | 0.0440 | 0.0000 | 0.0000 |
| 17 | 62.2250 | 0.5750 | 0.2660 | 18.4460 | 14.0980 | 1.2470 | 2.5850 | 0.2620 | 0.2270 | 0.0330 | 0.0240 | 0.0120 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 18 | 62.2320 | 0.4100 | 0.3470 | 18.1740 | 13.4390 | 1.4600 | 3.2060 | 0.3510 | 0.3170 | 0.0410 | 0.0190 | 0.0040 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 19 | 62.3600 | 0.2400 | 4.5400 | 5.9700 | 2.9400 | 0.5700 | 1.2100 | 0.5300 | 0.7400 | 1.1200 | 0.8100 | 0.2700 | 0.0100 | 0.0000 | 18.6700 | 0.0100 | 0.0000 | 0.0000 | 0.0000 | 0.0100 |
| 20 | 63.1558 | 1.2845 | 9.3052 | 6.5098 | 7.1230 | 1.5631 | 4.2964 | 1.3346 | 2.9297 | 1.5611 | 0.6192 | 0.1573 | 0.0661 | 0.0942 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 21 | 65.2760 | 16.8160 | 17.8300 | 0.0790 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 22 | 66.0100 | 0.2700 | 2.4800 | 10.2400 | 4.7900 | 0.5500 | 1.2700 | 0.2000 | 0.2700 | 0.1400 | 0.0600 | 0.0100 | 0.0000 | 0.0000 | 13.7000 | 0.0100 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 23 | 66.0788 | 9.9204 | 0.5784 | 12.8100 | 6.5933 | 0.7563 | 1.8297 | 0.3718 | 0.4569 | 0.2708 | 0.2007 | 0.0902 | 0.0188 | 0.0012 | 0.0000 | 0.0000 | 0.0000 | 0.0012 | 0.0000 | 0.0000 |
| 24 | 67.1400 | 0.0400 | 29.0400 | 3.1300 | 0.5700 | 0.0600 | 0.0000 | 0.0200 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 25 | 67.4407 | 0.4429 | 1.9014 | 22.4710 | 6.4618 | 0.2882 | 0.8033 | 0.0714 | 0.0837 | 0.0266 | 0.0067 | 0.0009 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0008 | 0.0000 | 0.0000 |
| 26 | 68.2688 | 2.3016 | 0.3496 | 10.4585 | 8.9882 | 1.1755 | 3.2423 | 0.8964 | 1.3403 | 1.1004 | 1.2788 | 0.4216 | 0.0698 | 0.0077 | 0.0000 | 0.0000 | 0.0000 | 0.0035 | 0.0000 | 0.0000 |
| 27 | 69.5611 | 8.5492 | 1.0400 | 16.8612 | 3.0417 | 0.1206 | 0.2572 | 0.0207 | 0.0162 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.5320 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 28 | 71.3854 | 3.1463 | 0.9536 | 24.2667 | 0.1531 | 0.0078 | 0.0152 | 0.0015 | 0.0017 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0688 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 29 | 73.6505 | 0.8567 | 1.7302 | 13.9950 | 6.7047 | 1.4275 | 1.2579 | 0.2356 | 0.1104 | 0.0315 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30 | 73.7289 | 2.8304 | 0.9697 | 21.9783 | 0.2927 | 0.0382 | 0.0679 | 0.0145 | 0.0135 | 0.0033 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0625 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 31 | 74.7042 | 0.8729 | 1.5901 | 6.0731 | 8.1212 | 5.0359 | 2.4555 | 0.6363 | 0.3099 | 0.1005 | 0.1005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 32 | 75.0000 | 3.4000 | 0.0000 | 17.3000 | 2.7000 | 0.3000 | 0.6000 | 0.2000 | 0.2000 | 0.2000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 33 | 75.4500 | 0.0000 | 11.2800 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 13.2700 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 34 | 75.5462 | 5.7698 | 0.2012 | 8.1642 | 5.0275 | 0.8211 | 2.3452 | 0.6770 | 0.9229 | 0.3818 | 0.1176 | 0.0156 | 0.0006 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0013 | 0.0000 | 0.0000 |

| Gas | C1 | N2 | CO2 | C2 | C3 | iC4 | C4 | iC5 | C5 | C6 | C7 | C8 | C9 | C10 | H2S | He | H2O | O2 | Ar | H2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 | 75.7690 | 0.3300 | 0.4570 | 10.6480 | 7.9420 | 1.0730 | 2.5450 | 0.5080 | 0.4960 | 0.1430 | 0.0600 | 0.0290 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 36 | 76.2332 | 22.0650 | 0.5800 | 0.9625 | 0.0299 | 0.0077 | 0.0041 | 0.0022 | 0.0015 | 0.0006 | 0.0004 | 0.0000 | 0.0001 | 0.0000 | 0.0000 | 0.0910 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 37 | 77.1203 | 0.5364 | 0.1685 | 12.5944 | 6.3420 | 0.8574 | 1.5559 | 0.3129 | 0.2879 | 0.2243 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 38 | 77.2724 | 5.0894 | 0.0001 | 14.9209 | 2.1267 | 0.2492 | 0.2681 | 0.0355 | 0.0246 | 0.0039 | 0.0017 | 0.0002 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 39 | 77.4110 | 0.4470 | 0.0980 | 15.5080 | 4.9670 | 0.4150 | 0.8590 | 0.1010 | 0.1030 | 0.0270 | 0.0040 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0210 | 0.0000 | 0.0040 | 0.0000 | 0.0350 |
| 40 | 77.5861 | 1.5231 | 0.0000 | 15.3834 | 4.6931 | 0.3293 | 0.3961 | 0.0363 | 0.0203 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0324 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 41 | 77.9119 | 0.5529 | 0.8954 | 12.0232 | 4.5116 | 0.4356 | 1.5023 | 0.2823 | 0.4740 | 0.3719 | 0.3786 | 0.3549 | 0.1927 | 0.0248 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 42 | 77.9610 | 0.6400 | 0.3850 | 8.6080 | 7.7210 | 0.9470 | 2.4790 | 0.4530 | 0.4550 | 0.1680 | 0.1230 | 0.0600 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 43 | 77.9700 | 0.3710 | 0.2420 | 10.0970 | 7.3760 | 0.9050 | 2.0200 | 0.3280 | 0.3450 | 0.1990 | 0.0670 | 0.0800 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 44 | 79.3660 | 1.1630 | 0.1140 | 11.6770 | 4.9880 | 0.4470 | 1.1970 | 0.2630 | 0.2520 | 0.1530 | 0.0876 | 0.0385 | 0.0054 | 0.0008 | 0.0000 | 0.0710 | 0.0000 | 0.0000 | 0.0030 | 0.1740 |
| 45 | 79.8480 | 0.5450 | 0.9260 | 9.0030 | 6.2030 | 1.3060 | 1.5250 | 0.3620 | 0.2010 | 0.0543 | 0.0235 | 0.0032 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 46 | 79.8501 | 0.6320 | 0.5690 | 10.3779 | 4.5760 | 0.5450 | 1.5670 | 0.3560 | 0.5840 | 0.9430 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 47 | 79.8810 | 0.1950 | 0.1600 | 7.8720 | 6.8950 | 0.8840 | 2.3780 | 0.5510 | 0.5810 | 0.4210 | 0.1170 | 0.0520 | 0.0130 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 48 | 80.2182 | 1.4611 | 0.8473 | 11.9057 | 4.8587 | 0.3035 | 0.3354 | 0.0181 | 0.0098 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0423 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 49 | 80.5829 | 0.4460 | 1.0225 | 12.0058 | 5.2271 | 0.2352 | 0.3823 | 0.0449 | 0.0334 | 0.0127 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0072 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 50 | 80.9006 | 3.3787 | 0.1412 | 6.7910 | 3.9885 | 0.5942 | 1.5664 | 0.4790 | 0.6457 | 0.7328 | 0.5487 | 0.1713 | 0.0150 | 0.0004 | 0.0000 | 0.0000 | 0.0000 | 0.0002 | 0.0000 | 0.0000 |
| 51 | 81.0000 | 0.0000 | 1.0300 | 7.4400 | 5.7200 | 1.0600 | 1.6400 | 0.4900 | 0.3900 | 0.5500 | 0.5000 | 0.1400 | 0.0300 | 0.0100 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 52 | 81.0780 | 0.4160 | 0.2070 | 8.0100 | 6.9280 | 0.7840 | 1.7190 | 0.2930 | 0.3080 | 0.1230 | 0.0900 | 0.0440 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 53 | 81.3000 | 0.2190 | 16.1170 | 1.6090 | 0.2780 | 0.0390 | 0.0590 | 0.0310 | 0.0280 | 0.3200 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 54 | 81.6967 | 7.3856 | 0.0090 | 6.7207 | 2.7017 | 0.2636 | 0.5704 | 0.1114 | 0.1179 | 0.0325 | 0.0094 | 0.0022 | 0.0005 | 0.0000 | 0.0010 | 0.3217 | 0.0120 | 0.0192 | 0.0000 | 0.0245 |
| 55 | 81.9516 | 1.6053 | 1.3275 | 9.0465 | 4.1697 | 0.5341 | 0.9529 | 0.1631 | 0.1432 | 0.0816 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0245 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 56 | 81.9957 | 6.0733 | 0.3069 | 5.8385 | 3.7371 | 0.3944 | 0.5448 | 0.2304 | 0.3691 | 0.1494 | 0.0502 | 0.0111 | 0.0001 | 0.0000 | 0.0000 | 0.2953 | 0.0000 | 0.0013 | 0.0000 | 0.0000 |
| 57 | 82.2284 | 0.4398 | 1.3906 | 10.5382 | 4.9058 | 0.1981 | 0.2526 | 0.0214 | 0.0154 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0096 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 58 | 82.3150 | 10.2461 | 1.4762 | 4.4363 | 1.0048 | 0.1382 | 0.1761 | 0.0447 | 0.0369 | 0.0299 | 0.0366 | 0.0093 | 0.0016 | 0.0006 | 0.0000 | 0.0414 | 0.0000 | 0.0011 | 0.0049 | 0.0003 |
| 59 | 82.4255 | 0.3344 | 3.4692 | 5.1480 | 3.3200 | 2.5356 | 1.1595 | 0.6124 | 0.3544 | 0.3205 | 0.3205 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 60 | 82.6012 | 1.6906 | 0.0749 | 6.8385 | 3.7874 | 0.5663 | 1.4552 | 0.4418 | 0.6047 | 0.4483 | 0.6516 | 0.4999 | 0.1966 | 0.0331 | 0.0000 | 0.0000 | 0.0000 | 0.0008 | 0.0000 | 0.0000 |
| 61 | 82.7500 | 0.2500 | 4.0000 | 2.5000 | 0.2500 | 0.0500 | 0.0500 | 0.0500 | 0.0500 | 0.0500 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 10.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 62 | 83.1000 | 6.4000 | 0.0000 | 8.7000 | 1.2000 | 0.1000 | 0.2000 | 0.1000 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 63 | 83.2691 | 0.6006 | 0.8680 | 9.2664 | 5.0314 | 0.5316 | 0.3904 | 0.0188 | 0.0130 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0107 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 64 | 83.2900 | 0.0000 | 7.8900 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 8.8200 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 65 | 83.4830 | 3.2660 | 0.0000 | 9.9060 | 2.9550 | 0.2080 | 0.1620 | 0.0100 | 0.0040 | 0.0040 | 0.0010 | 0.0010 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 66 | 83.5813 | 4.2353 | 0.0000 | 7.5280 | 3.2702 | 0.2732 | 0.6022 | 0.0674 | 0.0550 | 0.0203 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.3672 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 67 | 83.6280 | 0.2080 | 15.2330 | 0.7650 | 0.1480 | 0.0090 | 0.0090 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 68 | 84.2750 | 3.0264 | 0.0642 | 7.1697 | 3.2646 | 0.3387 | 0.9764 | 0.1976 | 0.2479 | 0.1256 | 0.1303 | 0.1158 | 0.0202 | 0.0000 | 0.0000 | 0.0474 | 0.0000 | 0.0003 | 0.0000 | 0.0000 |
| 69 | 84.2835 | 12.6630 | 0.6840 | 1.9567 | 0.2196 | 0.0360 | 0.0375 | 0.0094 | 0.0086 | 0.0029 | 0.0021 | 0.0010 | 0.0005 | 0.0001 | 0.0000 | 0.0600 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 70 | 84.3390 | 0.1640 | 1.8220 | 7.7990 | 2.8840 | 0.7180 | 0.7680 | 0.2920 | 0.1960 | 1.0180 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Gas | C1 | N2 | CO2 | C2 | C3 | iC4 | C4 | iC5 | C5 | C6 | C7 | C8 | C9 | C10 | H2S | He | H2O | O2 | Ar | H2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 71 | 84.8128 | 0.4090 | 2.1109 | 10.6707 | 1.7673 | 0.0800 | 0.1258 | 0.0115 | 0.0100 | 0.0020 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 72 | 85.1095 | 0.4936 | 0.0000 | 9.7169 | 3.5296 | 0.3473 | 0.6048 | 0.0805 | 0.0697 | 0.0290 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0191 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 73 | 85.1100 | 0.3220 | 2.5370 | 5.7710 | 3.0220 | 1.0070 | 0.9200 | 0.4820 | 0.2900 | 0.5390 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 74 | 86.1965 | 0.5599 | 0.8122 | 7.3234 | 3.3262 | 0.5628 | 1.0227 | 0.0990 | 0.0581 | 0.0197 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0196 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 75 | 86.8614 | 0.3004 | 0.7936 | 6.9925 | 2.8641 | 0.6977 | 0.6889 | 0.2534 | 0.1889 | 0.3591 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 76 | 86.8952 | 9.3360 | 1.7281 | 1.6452 | 0.0921 | 0.0392 | 0.0264 | 0.0088 | 0.0049 | 0.0200 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.2043 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 77 | 86.9450 | 0.1310 | 1.9940 | 6.4020 | 2.1900 | 0.4860 | 0.5580 | 0.3100 | 0.1890 | 0.7950 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 78 | 86.9808 | 5.4976 | 0.0012 | 5.0545 | 1.4683 | 0.2955 | 0.3367 | 0.1465 | 0.0426 | 0.0816 | 0.0173 | 0.0050 | 0.0023 | 0.0000 | 0.0000 | 0.0000 | 0.0050 | 0.0650 | 0.0000 | 0.0001 |
| 79 | 86.9820 | 10.9940 | 0.4670 | 1.3691 | 0.0690 | 0.0139 | 0.0109 | 0.0047 | 0.0032 | 0.0014 | 0.0009 | 0.0003 | 0.0004 | 0.0001 | 0.0000 | 0.0500 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 80 | 87.0604 | 0.4203 | 0.4686 | 7.6632 | 2.5745 | 0.4268 | 0.5982 | 0.2034 | 0.1299 | 0.4545 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0002 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 81 | 87.0964 | 0.0603 | 4.7921 | 5.7486 | 1.2839 | 0.3165 | 0.2351 | 0.1276 | 0.0723 | 0.2672 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 82 | 87.1484 | 9.3153 | 0.1705 | 1.5649 | 0.8258 | 0.1670 | 0.2277 | 0.0724 | 0.0492 | 0.0546 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.4041 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 83 | 87.2423 | 1.8419 | 0.1413 | 5.7116 | 2.9015 | 0.7146 | 0.8336 | 0.2722 | 0.1962 | 0.1166 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0283 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 84 | 87.3784 | 0.2014 | 1.5404 | 7.6701 | 2.0114 | 0.3055 | 0.3243 | 0.1019 | 0.0696 | 0.3906 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0065 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 85 | 87.4493 | 0.9484 | 0.6702 | 6.6335 | 2.5965 | 0.2998 | 0.6369 | 0.1772 | 0.1598 | 0.1450 | 0.1480 | 0.0980 | 0.0148 | 0.0009 | 0.0000 | 0.0000 | 0.0000 | 0.0005 | 0.0000 | 0.0000 |
| 86 | 87.5725 | 0.2176 | 1.8872 | 6.8165 | 2.0679 | 0.3665 | 0.4740 | 0.1551 | 0.1098 | 0.3265 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0065 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 87 | 87.7440 | 0.4140 | 1.2070 | 5.5400 | 2.3980 | 0.7250 | 0.7200 | 0.3750 | 0.2280 | 0.6490 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 88 | 87.7585 | 0.4479 | 0.0067 | 8.5377 | 2.3391 | 0.3931 | 0.3418 | 0.0920 | 0.0421 | 0.0206 | 0.0206 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 89 | 87.8114 | 0.6936 | 0.0000 | 9.1595 | 1.8576 | 0.1876 | 0.2300 | 0.0231 | 0.0187 | 0.0046 | 0.0011 | 0.0001 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0002 | 0.0125 | 0.0000 |
| 90 | 88.0460 | 3.5570 | 0.1460 | 4.7390 | 1.9560 | 0.2790 | 0.5570 | 0.1560 | 0.1650 | 0.1280 | 0.0650 | 0.0270 | 0.0023 | 0.0006 | 0.0000 | 0.1220 | 0.0000 | 0.0000 | 0.0180 | 0.0320 |
| 91 | 88.0590 | 0.1660 | 2.1120 | 4.9110 | 2.6290 | 0.5400 | 0.7460 | 0.2630 | 0.1950 | 0.3780 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 92 | 88.0655 | 9.6150 | 0.7240 | 1.4254 | 0.0588 | 0.0134 | 0.0100 | 0.0040 | 0.0030 | 0.0015 | 0.0008 | 0.0004 | 0.0002 | 0.0001 | 0.0000 | 0.0410 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 93 | 88.2203 | 0.0504 | 7.5601 | 3.2634 | 0.4730 | 0.1329 | 0.0777 | 0.0485 | 0.0258 | 0.1479 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 94 | 88.3395 | 2.0860 | 1.8030 | 4.9413 | 1.7055 | 0.3086 | 0.4677 | 0.1209 | 0.1111 | 0.0232 | 0.0041 | 0.0017 | 0.0000 | 0.0000 | 0.0000 | 0.0380 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 95 | 88.4040 | 0.2160 | 0.9840 | 5.9760 | 2.6050 | 0.4200 | 0.6070 | 0.1610 | 0.1290 | 0.4980 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 96 | 88.4790 | 0.2470 | 0.2120 | 4.6570 | 3.4260 | 0.5710 | 1.3030 | 0.3430 | 0.3450 | 0.1990 | 0.1460 | 0.0720 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 97 | 88.5275 | 0.0821 | 0.6722 | 6.5923 | 2.4754 | 0.5148 | 0.6513 | 0.1408 | 0.0970 | 0.1368 | 0.0785 | 0.0184 | 0.0129 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 98 | 88.8029 | 0.6003 | 9.6984 | 0.8640 | 0.0331 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0013 | 0.0000 | 0.0000 |
| 99 | 89.1227 | 8.4485 | 0.8618 | 1.1615 | 0.1070 | 0.0304 | 0.0191 | 0.0087 | 0.0036 | 0.0559 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1809 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 100 | 89.1660 | 0.2950 | 1.3480 | 4.8970 | 2.2920 | 0.4780 | 0.6890 | 0.2310 | 0.1910 | 0.1970 | 0.1450 | 0.0710 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 101 | 89.2923 | 0.1072 | 4.0183 | 3.9297 | 1.1935 | 0.3476 | 0.3044 | 0.1632 | 0.0953 | 0.2743 | 0.2743 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 102 | 89.3237 | 0.1520 | 0.3279 | 5.6208 | 2.5886 | 0.4661 | 0.7645 | 0.2356 | 0.1961 | 0.3218 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 103 | 89.4604 | 5.0154 | 0.0497 | 2.9667 | 1.1088 | 0.1796 | 0.3367 | 0.0914 | 0.0842 | 0.0941 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.6129 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 104 | 89.5730 | 0.1010 | 2.3330 | 5.2250 | 1.4780 | 0.3010 | 0.2280 | 0.1320 | 0.0580 | 0.5710 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 105 | 89.5815 | 0.2091 | 1.2618 | 5.4559 | 2.2016 | 0.6040 | 0.4579 | 0.0736 | 0.0551 | 0.0996 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 106 | 89.6437 | 0.4283 | 2.1759 | 4.0698 | 1.7465 | 0.5081 | 0.4588 | 0.1691 | 0.0885 | 0.3557 | 0.3557 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Gas | C1 | N2 | CO2 | C2 | C3 | iC4 | C4 | iC5 | C5 | C6 | C7 | C8 | C9 | C10 | H2S | He | H2O | O2 | Ar | H2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 107 | 89.7000 | 1.0000 | 1.0000 | 5.0000 | 1.5000 | 0.5000 | 0.5000 | 0.3500 | 0.2500 | 0.1000 | 0.1000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 108 | 89.7410 | 0.1500 | 0.9620 | 4.7540 | 2.3700 | 0.5680 | 0.6830 | 0.2750 | 0.1850 | 0.3120 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 109 | 89.7860 | 6.9350 | 2.8150 | 0.3716 | 0.0114 | 0.0006 | 0.0014 | 0.0001 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0770 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 110 | 89.9377 | 1.7026 | 0.6986 | 4.4450 | 1.0486 | 0.1650 | 0.4144 | 0.2116 | 0.2969 | 0.4184 | 0.4841 | 0.1091 | 0.0256 | 0.0023 | 0.0000 | 0.0000 | 0.0000 | 0.0040 | 0.0000 | 0.0000 |
| 111 | 90.0765 | 0.2123 | 1.1530 | 4.3098 | 2.3501 | 0.7576 | 0.5737 | 0.2242 | 0.1195 | 0.2233 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 112 | 90.1960 | 0.1965 | 0.6070 | 5.5605 | 1.9270 | 0.4413 | 0.4465 | 0.1669 | 0.1266 | 0.1379 | 0.1160 | 0.0697 | 0.0081 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 113 | 90.3700 | 2.1753 | 0.3191 | 4.2569 | 1.7162 | 0.1675 | 0.4167 | 0.1040 | 0.1370 | 0.0901 | 0.0958 | 0.0858 | 0.0404 | 0.0042 | 0.0000 | 0.0000 | 0.0000 | 0.0018 | 0.0000 | 0.0000 |
| 114 | 90.4054 | 4.1499 | 0.6147 | 3.7884 | 0.7247 | 0.0777 | 0.1180 | 0.0284 | 0.0259 | 0.0257 | 0.0084 | 0.0024 | 0.0005 | 0.0000 | 0.0000 | 0.0000 | 0.0030 | 0.0268 | 0.0000 | 0.0001 |
| 115 | 90.5850 | 0.2090 | 1.3360 | 4.2860 | 1.6130 | 0.3710 | 0.5430 | 0.2330 | 0.2210 | 0.2880 | 0.2110 | 0.1040 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 116 | 90.6010 | 0.5550 | 1.1860 | 3.9850 | 1.7980 | 0.5300 | 0.4980 | 0.2210 | 0.1450 | 0.4810 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 117 | 90.7072 | 0.2818 | 0.5716 | 4.0796 | 2.2932 | 0.4856 | 0.8144 | 0.2499 | 0.2119 | 0.3048 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 118 | 90.7787 | 0.2186 | 1.0822 | 4.0813 | 2.2047 | 0.6917 | 0.5234 | 0.1930 | 0.1006 | 0.1259 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 119 | 90.8192 | 7.1283 | 0.8707 | 0.8830 | 0.0793 | 0.0171 | 0.0164 | 0.0077 | 0.0050 | 0.0410 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.1325 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 120 | 91.0030 | 0.2960 | 0.5150 | 4.6160 | 2.0090 | 0.4470 | 0.5600 | 0.1790 | 0.1350 | 0.1150 | 0.0840 | 0.0410 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 121 | 91.0481 | 7.8453 | 0.0847 | 0.6367 | 0.1497 | 0.0575 | 0.0570 | 0.0320 | 0.0216 | 0.0337 | 0.0337 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 122 | 91.1460 | 0.3370 | 0.7420 | 5.2230 | 1.8060 | 0.2780 | 0.3130 | 0.0700 | 0.0450 | 0.0180 | 0.0090 | 0.0030 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 123 | 91.3400 | 0.8500 | 2.0500 | 4.8700 | 0.6200 | 0.0800 | 0.1100 | 0.0400 | 0.0300 | 0.0100 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 124 | 91.4382 | 0.1639 | 0.6756 | 4.9564 | 1.6000 | 0.3610 | 0.3506 | 0.1365 | 0.1001 | 0.2178 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 125 | 91.5195 | 5.5080 | 1.0850 | 1.6140 | 0.1283 | 0.0232 | 0.0175 | 0.0082 | 0.0048 | 0.0018 | 0.0008 | 0.0009 | 0.0001 | 0.0000 | 0.0000 | 0.0350 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 126 | 91.7010 | 0.1220 | 2.1850 | 3.3250 | 1.3850 | 0.2980 | 0.3800 | 0.1470 | 0.1090 | 0.3470 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 127 | 91.9680 | 1.0540 | 1.1190 | 4.5620 | 0.8000 | 0.0960 | 0.1580 | 0.0440 | 0.0360 | 0.0347 | 0.0238 | 0.0127 | 0.0034 | 0.0010 | 0.0000 | 0.0350 | 0.0000 | 0.0010 | 0.0050 | 0.0460 |
| 128 | 92.0080 | 0.1387 | 0.4716 | 4.2861 | 2.0480 | 0.3385 | 0.5119 | 0.1022 | 0.0719 | 0.0000 | 0.0161 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 129 | 92.0365 | 2.3046 | 0.1329 | 2.3815 | 1.7090 | 0.3690 | 0.6586 | 0.1785 | 0.1329 | 0.0454 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0513 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 130 | 92.0660 | 0.2460 | 0.4310 | 3.2590 | 1.9490 | 0.4260 | 0.7700 | 0.2560 | 0.2220 | 0.1790 | 0.1310 | 0.0650 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 131 | 92.0672 | 0.1575 | 0.6791 | 4.8054 | 1.5202 | 0.3069 | 0.2831 | 0.0372 | 0.0024 | 0.1409 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 132 | 92.0700 | 0.9000 | 1.9700 | 4.6300 | 0.3500 | 0.0300 | 0.0400 | 0.0100 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 133 | 92.1244 | 1.1733 | 0.9663 | 4.3547 | 0.9299 | 0.0930 | 0.1218 | 0.0259 | 0.0240 | 0.0147 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0293 | 0.0000 | 0.0000 | 0.0000 | 0.1427 |
| 134 | 92.1730 | 0.3030 | 1.0880 | 3.3700 | 1.3350 | 0.3670 | 0.4660 | 0.2370 | 0.1750 | 0.4860 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 135 | 92.2080 | 6.1960 | 0.5490 | 0.6290 | 0.1340 | 0.0380 | 0.0490 | 0.0280 | 0.0220 | 0.0985 | 0.0426 | 0.0059 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 136 | 92.2880 | 0.3810 | 0.5900 | 3.5210 | 1.8900 | 0.3500 | 0.4460 | 0.1290 | 0.0880 | 0.3170 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 137 | 92.4700 | 0.1130 | 2.5710 | 3.1580 | 0.9320 | 0.2110 | 0.2010 | 0.0710 | 0.0440 | 0.2300 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 138 | 92.6650 | 0.1640 | 1.7130 | 3.0830 | 1.1430 | 0.3490 | 0.2930 | 0.1400 | 0.0870 | 0.1590 | 0.0900 | 0.0570 | 0.0180 | 0.0390 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 139 | 92.7649 | 0.1087 | 0.7473 | 4.2620 | 1.1964 | 0.2600 | 0.2317 | 0.1019 | 0.0697 | 0.0888 | 0.0884 | 0.0673 | 0.0129 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 140 | 92.7705 | 0.1085 | 0.7454 | 4.2614 | 1.1924 | 0.2622 | 0.2446 | 0.1009 | 0.0694 | 0.0880 | 0.0830 | 0.0626 | 0.0113 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 141 | 92.7955 | 0.8276 | 0.8778 | 3.3217 | 1.0277 | 0.1378 | 0.2946 | 0.1091 | 0.1394 | 0.1222 | 0.1687 | 0.0673 | 0.0189 | 0.0011 | 0.0000 | 0.0000 | 0.0000 | 0.0020 | 0.0000 | 0.0000 |
| 142 | 92.8210 | 0.4920 | 0.1330 | 2.5990 | 1.9460 | 0.3080 | 0.7640 | 0.2180 | 0.2500 | 0.2240 | 0.1640 | 0.0810 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Gas | C1 | N2 | CO2 | C2 | C3 | iC4 | C4 | iC5 | C5 | C6 | C7 | C8 | C9 | C10 | H2S | He | H2O | O2 | Ar | H2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 143 | 92.8705 | 2.6320 | 1.2070 | 2.6674 | 0.3038 | 0.0396 | 0.0680 | 0.0194 | 0.0247 | 0.0114 | 0.0069 | 0.0034 | 0.0005 | 0.0000 | 0.0000 | 0.0540 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 144 | 92.8920 | 0.8600 | 1.0980 | 3.9360 | 0.7740 | 0.0960 | 0.1490 | 0.0380 | 0.0280 | 0.0230 | 0.0140 | 0.0040 | 0.0000 | 0.0000 | 0.0000 | 0.0400 | 0.0000 | 0.0030 | 0.0030 | 0.0420 |
| 145 | 92.8960 | 0.1130 | 2.3200 | 2.8520 | 0.8740 | 0.1880 | 0.2070 | 0.1030 | 0.0760 | 0.3700 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 146 | 93.0980 | 0.0780 | 1.6940 | 2.9630 | 1.1740 | 0.2300 | 0.3130 | 0.1180 | 0.0870 | 0.2450 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 147 | 93.3574 | 0.1104 | 0.7971 | 3.8551 | 1.0291 | 0.2289 | 0.2087 | 0.0891 | 0.0598 | 0.2644 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 148 | 93.5020 | 0.5120 | 0.9570 | 3.0130 | 1.0050 | 0.2920 | 0.2700 | 0.1330 | 0.0820 | 0.2340 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 149 | 93.8157 | 0.2557 | 4.9603 | 0.2670 | 0.4270 | 0.1112 | 0.0631 | 0.0313 | 0.0071 | 0.0513 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0104 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 150 | 93.8559 | 0.3466 | 0.9258 | 2.4528 | 1.1385 | 0.3116 | 0.3376 | 0.1358 | 0.1039 | 0.2737 | 0.0719 | 0.0410 | 0.0020 | 0.0030 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 151 | 93.9140 | 0.2380 | 1.0163 | 3.9143 | 0.7426 | 0.0759 | 0.0591 | 0.0172 | 0.0084 | 0.0143 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 152 | 93.9484 | 4.5259 | 1.5175 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 153 | 93.9553 | 5.6750 | 0.0000 | 0.2804 | 0.0176 | 0.0024 | 0.0024 | 0.0010 | 0.0009 | 0.0003 | 0.0004 | 0.0001 | 0.0000 | 0.0000 | 0.0000 | 0.0600 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 154 | 93.9989 | 0.3165 | 1.2846 | 2.6500 | 0.9825 | 0.2470 | 0.2563 | 0.1021 | 0.0767 | 0.0851 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 155 | 94.0117 | 2.1809 | 0.0897 | 2.0571 | 0.8996 | 0.1408 | 0.2039 | 0.1678 | 0.1861 | 0.0238 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0388 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 156 | 94.0568 | 0.2633 | 0.3997 | 3.0892 | 1.3723 | 0.1864 | 0.3425 | 0.0913 | 0.0874 | 0.0555 | 0.0555 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 157 | 94.2340 | 0.6460 | 1.6110 | 2.6940 | 0.4520 | 0.0890 | 0.1010 | 0.0420 | 0.0270 | 0.0310 | 0.0220 | 0.0090 | 0.0020 | 0.0006 | 0.0000 | 0.0350 | 0.0000 | 0.0000 | 0.0000 | 0.0040 |
| 158 | 94.2780 | 0.1171 | 1.5515 | 2.8656 | 0.7104 | 0.1341 | 0.1367 | 0.0629 | 0.0361 | 0.1014 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0064 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 159 | 94.3208 | 1.3696 | 0.7678 | 3.1501 | 0.3198 | 0.0243 | 0.0332 | 0.0065 | 0.0052 | 0.0072 | 0.0031 | 0.0004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 160 | 94.3290 | 0.0620 | 2.1030 | 2.3100 | 0.6710 | 0.1030 | 0.1150 | 0.0480 | 0.0370 | 0.2220 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 161 | 94.3596 | 0.2463 | 0.9726 | 2.6069 | 0.9541 | 0.2723 | 0.2345 | 0.1071 | 0.0712 | 0.1723 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 162 | 94.4660 | 0.4940 | 0.8403 | 1.8171 | 1.1455 | 0.3088 | 0.4701 | 0.1627 | 0.1011 | 0.1792 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0152 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 163 | 94.5151 | 0.3018 | 0.6028 | 2.7308 | 0.9948 | 0.2498 | 0.2735 | 0.1200 | 0.0763 | 0.0833 | 0.0452 | 0.0153 | 0.0039 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 164 | 94.5426 | 2.3490 | 0.5610 | 2.0869 | 0.2880 | 0.0299 | 0.0693 | 0.0211 | 0.0182 | 0.0116 | 0.0105 | 0.0049 | 0.0005 | 0.0004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 165 | 94.5741 | 0.1782 | 1.1889 | 2.4794 | 0.4593 | 0.0945 | 0.1056 | 0.0871 | 0.0610 | 0.1920 | 0.2461 | 0.2372 | 0.0607 | 0.0028 | 0.0000 | 0.0000 | 0.0000 | 0.0007 | 0.0000 | 0.0000 |
| 166 | 94.6080 | 0.9240 | 3.3310 | 1.0950 | 0.0410 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 167 | 94.7250 | 1.7425 | 0.7459 | 2.2003 | 0.3330 | 0.0545 | 0.0737 | 0.0279 | 0.0205 | 0.0194 | 0.0088 | 0.0038 | 0.0010 | 0.0000 | 0.0000 | 0.0000 | 0.0020 | 0.0288 | 0.0000 | 0.0129 |
| 168 | 94.8060 | 0.0840 | 3.1660 | 1.5470 | 0.2310 | 0.0240 | 0.0190 | 0.0140 | 0.0280 | 0.0810 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 169 | 94.8987 | 0.0075 | 0.0000 | 3.7404 | 0.9310 | 0.2310 | 0.1836 | 0.0074 | 0.0004 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 170 | 95.0586 | 0.2148 | 1.2561 | 2.4278 | 0.4921 | 0.1088 | 0.1068 | 0.0739 | 0.0688 | 0.0893 | 0.0722 | 0.0177 | 0.0051 | 0.0006 | 0.0000 | 0.0000 | 0.0000 | 0.0010 | 0.0000 | 0.0000 |
| 171 | 95.1230 | 0.0890 | 2.5550 | 1.8350 | 0.2380 | 0.0400 | 0.0160 | 0.0140 | 0.0110 | 0.0790 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 172 | 95.1278 | 0.4483 | 1.5803 | 2.1265 | 0.3880 | 0.0852 | 0.0964 | 0.0438 | 0.0288 | 0.0375 | 0.0375 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 173 | 95.1296 | 0.1417 | 4.5179 | 0.1072 | 0.0711 | 0.0216 | 0.0052 | 0.0014 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0043 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 174 | 95.1900 | 1.3000 | 0.7000 | 2.5000 | 0.2000 | 0.0300 | 0.0300 | 0.0100 | 0.0100 | 0.0040 | 0.0020 | 0.0020 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0020 | 0.0200 | 0.0000 | 0.0000 |
| 175 | 95.4686 | 0.2466 | 0.9770 | 1.9659 | 0.6874 | 0.1672 | 0.2048 | 0.0852 | 0.0655 | 0.1319 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 176 | 95.4702 | 0.2542 | 0.9745 | 1.9836 | 0.6742 | 0.1824 | 0.2142 | 0.0774 | 0.0534 | 0.1158 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 177 | 95.4850 | 1.5987 | 0.5995 | 1.8984 | 0.1770 | 0.0154 | 0.0201 | 0.0050 | 0.0030 | 0.0030 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0350 | 0.0000 | 0.0000 | 0.0000 | 0.1599 |
| 178 | 95.4855 | 0.2507 | 0.8144 | 3.1207 | 0.3051 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0235 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

| Gas | C1 | N2 | CO2 | C2 | C3 | iC4 | C4 | iC5 | C5 | C6 | C7 | C8 | C9 | C10 | H2S | He | H2O | O2 | Ar | H2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 179 | 95.9240 | 0.0890 | 2.4290 | 1.2820 | 0.1980 | 0.0220 | 0.0150 | 0.0100 | 0.0010 | 0.0300 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 180 | 96.0217 | 0.0914 | 1.8278 | 1.5839 | 0.2857 | 0.0590 | 0.0480 | 0.0246 | 0.0134 | 0.0393 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0053 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 181 | 96.1610 | 0.6600 | 0.1600 | 2.0660 | 0.6260 | 0.0860 | 0.1250 | 0.0350 | 0.0310 | 0.0270 | 0.0130 | 0.0040 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 182 | 96.2180 | 0.3460 | 0.8150 | 1.4000 | 0.4960 | 0.1960 | 0.1450 | 0.0890 | 0.0530 | 0.2420 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 183 | 96.3703 | 0.2919 | 0.2980 | 1.4003 | 0.7800 | 0.1442 | 0.4601 | 0.0759 | 0.0549 | 0.1243 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 184 | 96.5320 | 0.8940 | 0.6630 | 1.7090 | 0.1490 | 0.0160 | 0.0250 | 0.0060 | 0.0040 | 0.0020 | 0.0010 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 185 | 96.6039 | 3.0703 | 0.3109 | 0.0149 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 186 | 96.6740 | 1.9310 | 0.0000 | 1.3450 | 0.0460 | 0.0010 | 0.0020 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 187 | 97.1800 | 0.6290 | 1.7110 | 0.4540 | 0.0220 | 0.0020 | 0.0020 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 188 | 97.4747 | 0.3825 | 1.1257 | 0.9474 | 0.0686 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0011 | 0.0000 | 0.0000 |
| 189 | 98.1106 | 0.8134 | 0.1209 | 0.6112 | 0.2153 | 0.0339 | 0.0453 | 0.0115 | 0.0092 | 0.0060 | 0.0061 | 0.0028 | 0.0003 | 0.0000 | 0.0000 | 0.0134 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 190 | 98.3409 | 0.8611 | 0.7678 | 0.0088 | 0.0038 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0177 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 191 | 98.3621 | 1.2943 | 0.2602 | 0.0576 | 0.0000 | 0.0058 | 0.0000 | 0.0012 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0189 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 192 | 98.3735 | 0.0000 | 1.6940 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 193 | 98.6954 | 0.9137 | 0.3750 | 0.0065 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0094 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 194 | 99.0626 | 0.8604 | 0.0560 | 0.0108 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0102 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 195 | 99.1600 | 0.5673 | 0.1189 | 0.1349 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0189 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 196 | 99.2875 | 0.5122 | 0.0483 | 0.1267 | 0.0098 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0155 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 197 | 99.2896 | 0.3683 | 0.2181 | 0.0922 | 0.0095 | 0.0017 | 0.0012 | 0.0005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0189 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 198 | 99.5494 | 0.3672 | 0.0470 | 0.0344 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0010 | 0.0010 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 199 | 99.6953 | 0.2016 | 0.0094 | 0.0767 | 0.0068 | 0.0020 | 0.0007 | 0.0016 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0060 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 200 | 100.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |