

# ADF10: iso-electronic master files

Isoelectronic master file data. Formatting conventions and variable storage are given below.

*Utilising subroutines :*

ADAS404

*Formatted files to ADF10 specification :*

| Database Status                                | Date = March 17, 2003                             | Data type = isoelectronic master files | Data root = /.../adas/adas/adf10/ |                 |                   |                |
|--|---|--|-----------------------------------|-----------------|-------------------|----------------|
| <i>Classes</i>                                 | <i>Sequence</i>                                   | <i>Directory</i>                       | <i>z1 range</i>                   | <i>Comments</i> | <i>Resolution</i> | <i>Quality</i> |
| acd, scd                                       | al,ar,b,be,c,cl,f,h,he,<br>li,mg,n,na,ne,o,p,s,si | <class>74                              | 2-19                              | Summers, c-r    | unresolved        | medium         |
| acd, scd, xcd, qcd,<br>prb, plt, met           | h,he,li,be,b,c,n,o                                | <class>93                              | 1-8                               | ADAS208, c-r    | LS                | medium         |
| acd, scd                                       | v, cr, nb, mo                                     | <class>93                              | 0-1                               | ADAS208, c-r    | LS                | medium         |
| acd, scd, ccd, xcd, qcd,<br>prb, plt, prc, met | h,he,li,be,b,c,n,o                                | <class>96                              | 1-10                              | ADAS208, c-r    | LS                | high           |

- Notes:
1. Summers denotes Summers (1974) Appleton Laboratory Report IM3657.
  2. c-r denotes collisional radiative data with density dependence.
  3. LS resolved datasets have the notation <seq><metp><met>.dat where <seq> denotes the isoelectronic sequence, <metp> denotes the recombining ion (parent) metastable index and <met> denotes the recombined ion metastable index.
  4. The 1996 data is the year number used for the output from the GCR Project. The 1996 data has extended temperature and density ranges and improved low level data. They supercedes the 1993 data.
  5. 24 Oct. 1999 revisions include replacement of the whole /prb96 due to an altered format prescription. The previous form has been moved to /prb96\_old. There are updates of all the asd10 classes to include nitrogen and oxygen ions and to update helium and carbon ions.

*Data lines :*

Partial file - class 1-7

*Format:*

IPRT, TRMPRT, SPNPRT, NCTPRT, IGRD, SPNSYS, SSYWT

IZE, ITE, IDE [, CPOT]

(ZIPT(IZ),IZ=1,IZE)

[ (EIA(I),I=1,IPOT) ] class 2 only

(DENSR(ID),ID=1,IDE)

(TR(IT),IT=1,ITE)

for IZ=1,IZE

IPRT, IGRD, IZ1, DATE

for IT=1,ITE

(AIPT(ID,IT,IZ), ID=1,IDE)

repeat

repeat

Standard file

IZE, ITE, IDE [, CPOT]

(ZIPT(IZ),IZ=1,IZE)

[ (EIA(I),I=1,IPOT) ] classes 2, 8 & 9 only

(DENSR(ID),ID=1,IDE)

(TR(IT),IT=1,ITE)

for IZ=1,IZE

IZ1, DATE

for IT=1,ITE

(AIPT(ID,IT,IZ), ID=1,IDE)

repeat

repeat

Partial file - class 8-9

NMET

(IORD(I),I=1,NMET)

(DESIG(I),I=1,NMET)

(CPIND(I),I=1,NMET)

(PRTREF(I),I=1,NMET)

(SPNREF(I),I=1,NMET)

IZE, ITE, IDE [, CPOT]

(ZIPT(IZ),IZ=1,IZE)

[ (EIA(I),I=1,IPOT) ] classes 8 & 9 only

(DENSr(ID),ID=1,IDE)

(TR(IT),IT=1,ITE)

for IZ=1,IZE

for I=1,NMET

IMET

for IT=1,ITE

(AIPT(ID,IT,IZ), ID=1,IDE)

repeat

repeat

repeat

*variable identification :*

*name*

*meaning*

IPRT

index of parent metastable

|          |   |
|----------|---|
| TRMPRT   | parent term   |
| SPNPRT   | parent spin (multiplicity)                          |
| NCTPRT   | n-shell cut-off for parent based levels             |
| IGRD     | index of recombined ion metastable                  |
| SPNSYS   | spin system (multiplicity)                          |
| SSYWT    | spin system fractional weighting factor             |
|          |   |
| NMET     | number of metastables                               |
| IORD()   | order of listing fro metastables                    |
| DESIG()  | designation of metastables                          |
| CPIND()  | specific ion file index referencing for metastables |
| PRTREF() | parent reference (unset)                            |
| SPNREF() | parent spin reference (unset)                       |
|          |   |
| IZE      | number of sequence members                          |
| ITE      | number of temperatures                              |
| IDE      | number of densities                                 |
| CPOT     | number of ionisation potentials given for sequence  |
| ZIPT()   | recombining ion charges                             |
| EIA()    | ionisation potentials (cm-1)                        |
| DENSR()  | z-scaled (reduced) densities (cm-3)                 |
| TR()     | z-scaled (reduced) temperatures (K)                 |
|          |   |
| IZ1      | recombining ion charge                              |

DATE            date  
 IMET           metastable index  
  
 AIPT(,,)        generalised collisional radiative coefficients ( units according to  
 class)

Table B10c - partial file - class 2

```

=====
IPRT= 1 TRMPRT=(2S) SPNPRT= 2. NCTPRT=1000 IGRD= 1 SPNSYS= 1. SSYSWT= 0.25
-----
      3  11      8  50
      1.00000  3.00000  5.00000
-----
      75192.1  202887.4  386241.0  624866.0  918657.0  1267622.0
      1671792.0  2130800.0  2647400.0  3221080.0  3839800.0  4520100.0
      5255900.0  6047200.0  6894200.0  7810000.0  8770000.0  9780000.0
      10860000.0  11990000.0  13180000.0  14420000.0  15730000.0  17090000.0
      18510000.0  19830000.0  21350000.0  22900000.0  24530000.0  26200000.0
      27930000.0  29710000.0  31550000.0  33496000.0  35544000.0  37693000.0
      39943000.0  42290000.0  44730000.0  47258000.0  49867000.0  52547000.0
      55286000.0  58073000.0  60890000.0  63721000.0  66546000.0  69241000.0
      72081000.0  74740000.0
-----
      1.00D-03  1.00D+00  1.00D+03  1.00D+06  1.00D+09  1.00D+12  1.00D+15  1.00D+18
      1.00D+03  2.00D+03  5.00D+03  1.00D+04  2.00D+04  5.00D+04  1.00D+05  2.00D+05
      5.00D+05  1.00D+06  2.00D+06
-----
      / IPRT= 1 / IGRD= 1 / Z1= 1 / DATE=05/03/93
      1.96D-55  1.96D-55  1.96D-55  2.19D-55  1.30D-53  4.51D-49  8.59D-46  1.31D-45
      6.10D-32  6.10D-32  6.10D-32  6.57D-32  1.15D-31  1.28D-29  1.36D-26  2.38D-26
      7.59D-18  7.59D-18  7.60D-18  7.95D-18  1.15D-17  5.05D-17  6.97D-15  1.26D-14
      3.79D-13  3.79D-13  3.79D-13  3.91D-13  5.18D-13  1.50D-12  3.52D-11  6.00D-11
      1.22D-10  1.22D-10  1.22D-10  1.23D-10  1.44D-10  2.86D-10  2.30D-09  3.96D-09
      5.89D-09  5.89D-09  5.89D-09  5.92D-09  6.27D-09  8.74D-09  3.59D-08  5.64D-08
      2.44D-08  2.44D-08  2.44D-08  2.44D-08  2.51D-08  3.09D-08  1.07D-07  1.52D-07
      5.34D-08  5.34D-08  5.34D-08  5.35D-08  5.44D-08  6.24D-08  1.97D-07  2.62D-07
      8.71D-08  8.71D-08  8.71D-08  8.72D-08  8.80D-08  9.58D-08  2.79D-07  3.60D-07
      9.96D-08  9.96D-08  9.96D-08  9.97D-08  1.00D-07  1.07D-07  2.84D-07  3.69D-07
      1.01D-07  1.01D-07  1.01D-07  1.01D-07  1.01D-07  1.06D-07  2.68D-07  3.54D-07
-----
      / IPRT= 1 / IGRD= 1 / Z1= 3 / DATE=07/03/93
      3.43D-36  3.43D-36  3.44D-36  3.89D-36  1.10D-35  1.06D-31  2.88D-29  2.94D-29
      1.00D-22  1.00D-22  1.01D-22  1.08D-22  1.93D-22  2.57D-20  6.77D-18  6.99D-18
      1.68D-14  1.68D-14  1.68D-14  1.73D-14  2.23D-14  1.68D-13  2.10D-11  2.21D-11
      1.07D-11  1.07D-11  1.07D-11  1.09D-11  1.26D-11  3.82D-11  1.62D-09  1.69D-09
      3.06D-10  3.06D-10  3.06D-10  3.08D-10  3.33D-10  6.66D-10  1.07D-08  1.10D-08
      2.53D-09  2.53D-09  2.53D-09  2.54D-09  2.64D-09  4.07D-09  3.11D-08  3.17D-08
      5.29D-09  5.29D-09  5.29D-09  5.30D-09  5.44D-09  7.53D-09  4.31D-08  4.38D-08
      7.57D-09  7.57D-09  7.57D-09  7.58D-09  7.72D-09  9.93D-09  4.74D-08  4.81D-08
      8.84D-09  8.84D-09  8.84D-09  8.84D-09  8.95D-09  1.08D-08  4.54D-08  4.61D-08
      8.65D-09  8.65D-09  8.65D-09  8.65D-09  8.74D-09  1.02D-08  4.11D-08  4.18D-08
      7.81D-09  7.81D-09  7.81D-09  7.82D-09  7.88D-09  8.96D-09  3.60D-08  3.67D-08
-----
      / IPRT= 1 / IGRD= 1 / Z1= 5 / DATE=16/03/93
  
```

|          |          |          |          |          |          |          |          |
|----------|----------|----------|----------|----------|----------|----------|----------|
| 6.65D-33 | 6.65D-33 | 6.66D-33 | 7.78D-33 | 2.53D-32 | 6.93D-29 | 7.77D-27 | 7.94D-27 |
| 2.78D-21 | 2.78D-21 | 2.78D-21 | 3.00D-21 | 5.48D-21 | 5.25D-19 | 6.26D-17 | 6.49D-17 |
| 3.24D-14 | 3.24D-14 | 3.24D-14 | 3.33D-14 | 4.32D-14 | 4.35D-13 | 1.87D-11 | 1.94D-11 |
| 8.42D-12 | 8.42D-12 | 8.42D-12 | 8.54D-12 | 9.85D-12 | 4.92D-11 | 7.80D-10 | 7.97D-10 |
| 1.49D-10 | 1.49D-10 | 1.49D-10 | 1.50D-10 | 1.63D-10 | 5.76D-10 | 4.50D-09 | 4.56D-09 |
| 9.00D-10 | 9.00D-10 | 9.00D-10 | 9.03D-10 | 9.43D-10 | 2.56D-09 | 1.22D-08 | 1.23D-08 |
| 1.66D-09 | 1.66D-09 | 1.66D-09 | 1.67D-09 | 1.72D-09 | 4.02D-09 | 1.60D-08 | 1.61D-08 |
| 2.21D-09 | 2.21D-09 | 2.21D-09 | 2.22D-09 | 2.26D-09 | 4.69D-09 | 1.69D-08 | 1.70D-08 |
| 2.45D-09 | 2.45D-09 | 2.45D-09 | 2.45D-09 | 2.49D-09 | 4.48D-09 | 1.55D-08 | 1.56D-08 |
| 2.34D-09 | 2.34D-09 | 2.34D-09 | 2.34D-09 | 2.37D-09 | 3.91D-09 | 1.38D-08 | 1.39D-08 |
| 2.10D-09 | 2.10D-09 | 2.10D-09 | 2.10D-09 | 2.13D-09 | 3.23D-09 | 1.19D-08 | 1.20D-08 |

Table B10e - partial file - class 8

```

=====
NMET          = 2
ORDER         =                1          2
DESIGNATION   = 2S2(1S)        2S2P(3P)
COPDAT INDEX =                1          2
PARENT REF.  =                *          *
SPNSYS REF.  =                *          *
-----
      3      11      8
      1.00000  3.00000  5.00000
-----
1.00D+03  1.00D+00  1.00D+03  1.00D+06  1.00D+09  1.00D+12  1.00D+15  1.00D+18
1.00D+03  2.00D+03  5.00D+03  1.00D+04  2.00D+04  5.00D+04  1.00D+05  2.00D+05
5.00D+05  1.00D+06  2.00D+06
-----
TOTAL LINE POWER -----/ Z1= 1 / DATE= 05/03/93
/1/
4.00D-45  4.00D-45  4.00D-45  4.00D-45  4.00D-45  3.99D-45  1.63D-45  2.76D-48
6.76D-32  6.76D-32  6.76D-32  6.76D-32  6.76D-32  6.75D-32  3.42D-32  6.90D-35
5.35D-24  5.35D-24  5.35D-24  5.35D-24  5.35D-24  5.35D-24  3.31D-24  8.77D-27
2.46D-21  2.46D-21  2.46D-21  2.46D-21  2.46D-21  2.45D-21  1.50D-21  4.48D-24
6.79D-20  6.79D-20  6.79D-20  6.79D-20  6.78D-20  6.67D-20  3.57D-20  1.00D-22
6.51D-19  6.51D-19  6.51D-19  6.50D-19  6.48D-19  6.29D-19  2.74D-19  6.10D-22
1.56D-18  1.56D-18  1.56D-18  1.56D-18  1.56D-18  1.51D-18  5.43D-19  1.00D-21
2.50D-18  2.50D-18  2.50D-18  2.50D-18  2.49D-18  2.42D-18  7.47D-19  1.22D-21
3.21D-18  3.21D-18  3.21D-18  3.21D-18  3.21D-18  3.13D-18  9.22D-19  1.42D-21
3.16D-18  3.16D-18  3.16D-18  3.16D-18  3.16D-18  3.10D-18  9.68D-19  1.52D-21
2.96D-18  2.96D-18  2.96D-18  2.96D-18  2.95D-18  2.91D-18  9.89D-19  1.61D-21
/2/
1.34D-11  1.34D-14  1.34D-17  1.34D-20  1.34D-23  1.34D-26  1.35D-29  1.36D-32
1.34D-11  1.34D-14  1.34D-17  1.34D-20  1.39D-23  5.18D-25  2.55D-25  5.15D-28
1.34D-11  1.34D-14  1.34D-17  1.56D-20  2.24D-21  2.22D-21  1.36D-21  3.66D-24
1.34D-11  1.34D-14  1.34D-17  5.10D-20  3.76D-20  3.74D-20  2.10D-20  7.38D-23
1.34D-11  1.34D-14  1.36D-17  1.93D-19  1.79D-19  1.74D-19  7.55D-20  3.64D-22
1.34D-11  1.34D-14  1.40D-17  5.88D-19  5.71D-19  5.36D-19  1.92D-19  8.78D-22
1.34D-11  1.34D-14  1.44D-17  1.05D-18  1.03D-18  9.68D-19  3.42D-19  1.16D-21
1.34D-11  1.34D-14  1.49D-17  1.51D-18  1.49D-18  1.40D-18  4.90D-19  1.35D-21
1.34D-11  1.34D-14  1.53D-17  1.88D-18  1.86D-18  1.78D-18  6.14D-19  1.49D-21
1.34D-11  1.34D-14  1.52D-17  1.78D-18  1.76D-18  1.69D-18  5.96D-19  1.48D-21
1.34D-11  1.34D-14  1.50D-17  1.59D-18  1.57D-18  1.52D-18  5.56D-19  1.46D-21
-----
TOTAL LINE POWER -----/ Z1= 3 / DATE= 05/03/93
/1/

```

|                              |          |          |          |          |          |          |          |
|------------------------------|----------|----------|----------|----------|----------|----------|----------|
| 5.43D-25                     | 5.43D-25 | 5.43D-25 | 5.43D-25 | 5.43D-25 | 4.23D-25 | 1.91D-27 | 1.92D-30 |
| 1.42D-21                     | 1.42D-21 | 1.42D-21 | 1.42D-21 | 1.42D-21 | 1.18D-21 | 6.79D-24 | 6.82D-27 |
| 1.34D-19                     | 1.34D-19 | 1.34D-19 | 1.34D-19 | 1.34D-19 | 1.19D-19 | 1.09D-21 | 1.11D-24 |
| 5.67D-19                     | 5.67D-19 | 5.67D-19 | 5.67D-19 | 5.67D-19 | 5.28D-19 | 8.95D-21 | 9.17D-24 |
| 1.14D-18                     | 1.14D-18 | 1.14D-18 | 1.14D-18 | 1.14D-18 | 1.11D-18 | 2.48D-20 | 2.54D-23 |
| 1.67D-18                     | 1.67D-18 | 1.67D-18 | 1.67D-18 | 1.67D-18 | 1.65D-18 | 4.02D-20 | 4.10D-23 |
| 1.76D-18                     | 1.76D-18 | 1.76D-18 | 1.76D-18 | 1.75D-18 | 1.75D-18 | 4.42D-20 | 4.49D-23 |
| 1.63D-18                     | 1.63D-18 | 1.63D-18 | 1.63D-18 | 1.62D-18 | 1.62D-18 | 4.42D-20 | 4.49D-23 |
| 1.36D-18                     | 1.36D-18 | 1.36D-18 | 1.36D-18 | 1.36D-18 | 1.36D-18 | 4.33D-20 | 4.42D-23 |
| 1.16D-18                     | 1.16D-18 | 1.16D-18 | 1.16D-18 | 1.16D-18 | 1.16D-18 | 4.35D-20 | 4.45D-23 |
| 9.88D-19                     | 9.88D-19 | 9.88D-19 | 9.88D-19 | 9.87D-19 | 9.93D-19 | 4.45D-20 | 4.57D-23 |
| /2/                          |          |          |          |          |          |          |          |
| 1.52D-10                     | 1.52D-13 | 1.52D-16 | 1.53D-19 | 3.64D-22 | 1.65D-22 | 7.44D-25 | 7.47D-28 |
| 1.52D-10                     | 1.52D-13 | 1.52D-16 | 1.63D-19 | 1.11D-20 | 9.04D-21 | 5.23D-23 | 5.26D-26 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 3.19D-19 | 1.66D-19 | 1.46D-19 | 1.45D-21 | 1.47D-24 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 6.10D-19 | 4.58D-19 | 4.19D-19 | 7.37D-21 | 7.57D-24 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 9.46D-19 | 7.93D-19 | 7.37D-19 | 1.54D-20 | 1.58D-23 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 1.24D-18 | 1.08D-18 | 1.00D-18 | 2.09D-20 | 2.13D-23 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 1.29D-18 | 1.13D-18 | 1.04D-18 | 2.21D-20 | 2.26D-23 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 1.22D-18 | 1.07D-18 | 9.83D-19 | 2.22D-20 | 2.27D-23 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 1.07D-18 | 9.16D-19 | 8.52D-19 | 2.24D-20 | 2.29D-23 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 9.54D-19 | 8.00D-19 | 7.50D-19 | 2.28D-20 | 2.34D-23 |
| 1.52D-10                     | 1.52D-13 | 1.53D-16 | 8.47D-19 | 6.93D-19 | 6.56D-19 | 2.34D-20 | 2.43D-23 |
| ----- TOTAL LINE POWER ----- |          |          |          |          | Z1= 5    | / DATE=  | 16/03/93 |
| /1/                          |          |          |          |          |          |          |          |
| 5.03D-22                     | 5.03D-22 | 5.03D-22 | 5.03D-22 | 5.02D-22 | 1.59D-22 | 2.32D-25 | 2.32D-28 |
| 3.55D-20                     | 3.55D-20 | 3.55D-20 | 3.55D-20 | 3.54D-20 | 1.40D-20 | 2.30D-23 | 2.30D-26 |
| 3.76D-19                     | 3.76D-19 | 3.76D-19 | 3.76D-19 | 3.76D-19 | 2.02D-19 | 5.47D-22 | 5.53D-25 |
| 7.54D-19                     | 7.54D-19 | 7.54D-19 | 7.54D-19 | 7.53D-19 | 5.26D-19 | 3.36D-21 | 3.41D-24 |
| 1.05D-18                     | 1.05D-18 | 1.05D-18 | 1.05D-18 | 1.04D-18 | 9.05D-19 | 8.61D-21 | 8.73D-24 |
| 1.18D-18                     | 1.18D-18 | 1.18D-18 | 1.17D-18 | 1.17D-18 | 1.17D-18 | 1.28D-20 | 1.29D-23 |
| 1.11D-18                     | 1.11D-18 | 1.11D-18 | 1.11D-18 | 1.11D-18 | 1.15D-18 | 1.31D-20 | 1.33D-23 |
| 9.77D-19                     | 9.77D-19 | 9.77D-19 | 9.77D-19 | 9.75D-19 | 1.03D-18 | 1.26D-20 | 1.27D-23 |
| 7.92D-19                     | 7.92D-19 | 7.92D-19 | 7.92D-19 | 7.91D-19 | 8.49D-19 | 1.22D-20 | 1.23D-23 |
| 6.69D-19                     | 6.69D-19 | 6.69D-19 | 6.69D-19 | 6.68D-19 | 7.25D-19 | 1.24D-20 | 1.26D-23 |
| 5.65D-19                     | 5.65D-19 | 5.65D-19 | 5.65D-19 | 5.64D-19 | 6.18D-19 | 1.30D-20 | 1.32D-23 |
| /2/                          |          |          |          |          |          |          |          |
| 1.51D-10                     | 1.51D-13 | 1.51D-16 | 1.56D-19 | 5.01D-21 | 1.49D-21 | 2.15D-24 | 2.16D-27 |
| 1.51D-10                     | 1.51D-13 | 1.51D-16 | 2.09D-19 | 5.79D-20 | 2.09D-20 | 3.31D-23 | 3.31D-26 |
| 1.51D-10                     | 1.51D-13 | 1.51D-16 | 4.26D-19 | 2.75D-19 | 1.28D-19 | 4.66D-22 | 4.75D-25 |
| 1.51D-10                     | 1.51D-13 | 1.52D-16 | 6.20D-19 | 4.69D-19 | 2.78D-19 | 2.40D-21 | 2.46D-24 |
| 1.51D-10                     | 1.51D-13 | 1.52D-16 | 7.96D-19 | 6.44D-19 | 4.49D-19 | 4.76D-21 | 4.84D-24 |
| 1.51D-10                     | 1.51D-13 | 1.52D-16 | 9.19D-19 | 7.64D-19 | 5.81D-19 | 6.39D-21 | 6.49D-24 |
| 1.51D-10                     | 1.51D-13 | 1.52D-16 | 9.09D-19 | 7.54D-19 | 5.89D-19 | 6.63D-21 | 6.73D-24 |
| 1.51D-10                     | 1.51D-13 | 1.52D-16 | 8.48D-19 | 6.93D-19 | 5.53D-19 | 6.67D-21 | 6.77D-24 |
| 1.51D-10                     | 1.51D-13 | 1.52D-16 | 7.41D-19 | 5.88D-19 | 4.84D-19 | 6.84D-21 | 6.96D-24 |
| 1.51D-10                     | 1.51D-13 | 1.52D-16 | 6.62D-19 | 5.09D-19 | 4.30D-19 | 7.14D-21 | 7.29D-24 |
| 1.51D-10                     | 1.51D-13 | 1.52D-16 | 5.90D-19 | 4.37D-19 | 3.79D-19 | 7.59D-21 | 7.79D-24 |

Table B10e - standard file

|            |            |            |            |            |            |  |  |
|------------|------------|------------|------------|------------|------------|--|--|
| 5          | 10         | 8          | 50         |            |            |  |  |
| 2.00000    | 3.00000    | 5.00000    | 9.00000    | 19.00000   |            |  |  |
| -----      |            |            |            |            |            |  |  |
| 198305.0   | 610079.0   | 1240815.0  | 2091618.0  | 3162477.0  | 4453397.0  |  |  |
| 5964387.0  | 7695434.0  | 9646532.0  | 11817690.0 | 14208910.0 | 16820190.0 |  |  |
| 19651550.0 | 22702940.0 | 25974410.0 | 29465950.0 | 33177500.0 | 37109150.0 |  |  |

41.260860.0 45632640.0 50224460.0 550236330.0 60068320.0 65320370.0  
 70792810.0 76484540.0 82396700.0 885288940.0 94888210.0 101453600.0  
 108246006.6 115238471.7 122490993.6 129943572.2 137616207.7 145508899.9  
 153621648.9 161954454.8 170507317.4 179280236.8 188273213.1 197486246.1  
 206919335.9 216572482.5 226445685.9 236538946.1 246855263.1 257385636.9  
 268139067.4 279112554.8

1.00D-03 1.00D+00 1.00D+03 1.00D+06 1.00D+09 1.00D+12 1.00D+15 1.00D+18  
 5.00D+03 1.00D+04 2.00D+04 5.00D+04 1.00D+05 2.00D+05 5.00D+05 1.00D+06  
 2.00D+06 5.00D+06

7.85D-29 7.85D-29 7.87D-29 7.99D-29 8.87D-29 2.40D-28 8.50D-26 1.02D-24  
 4.01D-19 4.01D-19 4.04D-19 4.04D-19 4.25D-19 6.81D-19 4.16D-17 1.63D-16  
 3.47D-14 3.49D-14 3.49D-14 3.49D-14 3.57D-14 4.48D-14 5.91D-13 1.15D-12  
 4.06D-11 4.06D-11 4.06D-11 4.07D-11 4.11D-11 4.51D-11 1.63D-10 2.22D-10  
 4.88D-10 4.88D-10 4.88D-10 4.88D-10 4.90D-10 5.16D-10 1.11D-09 1.35D-09  
 1.81D-09 1.81D-09 1.81D-09 1.81D-09 1.81D-09 1.87D-09 3.09D-09 3.54D-09  
 4.09D-09 4.09D-09 4.09D-09 4.09D-09 4.10D-09 4.18D-09 5.86D-09 6.51D-09  
 5.27D-09 5.27D-09 5.27D-09 5.27D-09 5.28D-09 5.36D-09 7.02D-09 7.72D-09  
 5.66D-09 5.66D-09 5.66D-09 5.66D-09 5.67D-09 5.74D-09 7.22D-09 7.95D-09  
 5.24D-09 5.24D-09 5.24D-09 5.24D-09 5.25D-09 5.31D-09 6.44D-09 7.14D-09

2.03D-27 2.03D-27 2.04D-27 2.07D-27 2.30D-27 6.72D-27 2.88D-24 2.30D-23  
 1.26D-18 1.26D-18 1.26D-18 1.27D-18 1.33D-18 2.24D-18 1.72D-16 6.19D-16  
 3.78D-14 3.78D-14 3.78D-14 3.80D-14 3.89D-14 5.03D-14 8.42D-13 1.62D-12  
 2.31D-11 2.31D-11 2.31D-11 2.31D-11 2.33D-11 2.59D-11 1.15D-10 1.59D-10  
 2.19D-10 2.19D-10 2.19D-10 2.20D-10 2.20D-10 2.34D-10 5.97D-10 7.37D-10  
 7.16D-10 7.16D-10 7.16D-10 7.16D-10 7.20D-10 7.46D-10 1.39D-09 1.62D-09  
 1.48D-09 1.48D-09 1.48D-09 1.48D-09 1.48D-09 1.51D-09 2.32D-09 2.62D-09  
 1.83D-09 1.83D-09 1.83D-09 1.83D-09 1.83D-09 1.86D-09 2.62D-09 2.94D-09  
 1.91D-09 1.91D-09 1.91D-09 1.91D-09 1.92D-09 1.95D-09 2.61D-09 2.93D-09  
 1.73D-09 1.73D-09 1.73D-09 1.73D-09 1.73D-09 1.76D-09 2.25D-09 2.56D-09

1.44D-26 1.44D-26 1.45D-26 1.47D-26 1.63D-26 5.11D-26 2.28D-23 1.38D-22  
 1.73D-18 1.73D-18 1.73D-18 1.74D-18 1.83D-18 3.21D-18 2.69D-16 8.93D-16  
 2.28D-14 2.28D-14 2.29D-14 2.34D-14 3.09D-14 5.93D-13 1.12D-12 5.93D-13  
 8.35D-12 8.35D-12 8.35D-12 8.37D-12 8.45D-12 9.50D-12 4.86D-11 6.72D-11  
 6.63D-11 6.63D-11 6.63D-11 6.64D-11 6.67D-11 7.13D-11 2.07D-10 2.58D-10  
 1.96D-10 1.96D-10 1.96D-10 1.96D-10 1.96D-10 2.04D-10 4.31D-10 5.11D-10  
 3.76D-10 3.76D-10 3.76D-10 3.76D-10 3.77D-10 3.87D-10 6.48D-10 7.44D-10  
 4.49D-10 4.49D-10 4.49D-10 4.49D-10 4.50D-10 4.60D-10 6.99D-10 7.99D-10  
 4.60D-10 4.60D-10 4.60D-10 4.60D-10 4.61D-10 4.70D-10 6.73D-10 7.73D-10  
 4.08D-10 4.08D-10 4.08D-10 4.08D-10 4.09D-10 4.16D-10 5.66D-10 6.58D-10

2.43D-26 2.43D-26 2.47D-26 2.47D-26 2.75D-26 9.01D-26 3.98D-23 2.04D-22  
 1.00D-18 1.00D-18 1.01D-18 1.01D-18 1.06D-18 1.91D-18 1.64D-16 5.14D-16  
 7.72D-15 7.72D-15 7.72D-15 7.76D-15 7.95D-15 1.06D-14 2.13D-13 3.96D-13  
 2.02D-12 2.02D-12 2.03D-12 2.03D-12 2.05D-12 2.32D-12 1.28D-11 1.76D-11  
 1.43D-11 1.43D-11 1.43D-11 1.43D-11 1.43D-11 1.54D-11 4.83D-11 6.06D-11  
 3.93D-11 3.93D-11 3.93D-11 3.93D-11 3.95D-11 4.13D-11 9.51D-11 1.14D-10  
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 8.42D-11 8.42D-11 8.42D-11 8.43D-11 8.43D-11 8.68D-11 1.40D-10 1.62D-10  
 8.49D-11 8.49D-11 8.49D-11 8.49D-11 8.51D-11 8.69D-11 1.32D-10 1.54D-10  
 7.44D-11 7.44D-11 7.44D-11 7.44D-11 7.46D-11 7.61D-11 1.09D-10 1.29D-10

1.14D-26 1.14D-26 1.14D-26 1.17D-26 1.29D-26 4.36D-26 1.89D-23 8.74D-23  
 2.36D-19 2.36D-19 2.38D-19 2.50D-19 4.59D-19 3.95D-17 1.19D-16 3.95D-17  
 1.28D-15 1.28D-15 1.28D-15 1.28D-15 1.32D-15 1.78D-15 3.68D-14 6.74D-14  
 2.70D-13 2.70D-13 2.70D-13 2.71D-13 2.73D-13 3.12D-13 1.81D-12 2.49D-12  
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