

Explanation of chemical data columns in the Illinois State Geological Survey's coal database files created for the resource assessment of the Danville, Baker, Herrin, and Springfield Coals in the Illinois Basin.

[This is a simplified data dictionary showing Field Name, Value, and Description for all the columns in the ASCII files ildachms.txt, ilhechms.txt, ilspchms.txt, and ilchms.txt. These text files as well as this file were created by R.H. Affolter (affolter@usgs.gov) of the U.S. Geological Survey from several files received from Colin Treworgy (colin@isgs.uiuc.edu) of the Illinois State Geological Survey and were used to create the ArcView chemical data shape files of the Springfield, Danville, and Herrin coals for the Illinois Basin resource assessment. All columns that are labeled column_Q were generated by R.H. Affolter and indicate the qualified values (indicated by L = less than) for selected elements. For additional information see the related metadata files for Illinois chemical data. For discussions of Illinois Basin coal chemical data and coal quality see chapter E (by Affolter and Hatch) in this publication.]

LIST OF FIELDS

All columns except DLONG and DLAT are in text to preserve original numbers.

Field Name	Type	Description
LABNO	TEXT	Laboratory sample number
STATE	TEXT	FIPS state code
COUNTY	TEXT	FIPS county code
STRATCODE	TEXT	ISGS stratigraphic code
DLONG	REAL	Decimal Longitude
DLAT	REAL	Decimal Latitude
THICK	TEXT	Thickness of sample
DEPTH	TEXT	Depth of sample
ELEV	TEXT	Elevation
SAMPLEDATE	TEXT	Sample date
ANALDATE	TEXT	Analysis date
SAMPLETYPE	TEXT	Sample type
ADL	TEXT	Air dried loss
MOISTURE	TEXT	(as received) Moisture content in percent.
VOLATILE	TEXT	(dry basis) Volatile matter content in percent.
FIXEDC	TEXT	(dry basis) Fixed carbon content in percent.
ASH	TEXT	(dry basis) Ash yield in percent.
TOTAL-SUL	TEXT	(dry basis) Total sulfur content in percent.
BTU	TEXT	(dry basis) Btu/lb

Field Name	Type	Description
CARBON	TEXT	(dry basis) Carbon content in percent.
HYDROGEN	TEXT	(dry basis) Hydrogen content in percent.
NITROGEN	TEXT	(dry basis) Nitrogen content in percent.
OXYGEN	TEXT	(dry basis) Oxygen content in percent.
ORGANIC-SUL	TEXT	(dry basis) Organic sulfur content in percent.
PYRITIC-SUL	TEXT	(dry basis) Pyritic sulfur content in percent.
SULFATE-SUL	TEXT	(dry basis) Sulfate sulfur content in percent.
FSI	TEXT	Free swelling index
TOT-CHLOR	TEXT	(dry basis) Total chlorine content in percent.
AFUSION-INIT	TEXT	(dry basis) Initial ash fusion temperature in degrees Fahrenheit.
AFUSION-SOFT	TEXT	(dry basis) softening temperature in degrees Fahrenheit.
AFUSION-HEMI	TEXT	(dry basis) Hemi ash fusion temperature in degrees Fahrenheit.
AFUSION-FLUID	TEXT	(dry basis) Fluid ash fusion temperature in degrees Fahrenheit.
EQM	TEXT	Equilibrium moisture
COMMENT	TEXT	Comments
TYPE	TEXT	Type of sample
MINE	TEXT	Mine name
SI	TEXT	(dry, whole-coal basis) Silicon content in percent converted from Silicon content in parts per million.
AL	TEXT	(dry, whole-coal basis) Aluminum content in percent. converted from Aluminum content in parts per million.
FE	TEXT	(dry, whole-coal basis) Iron content in percent converted from Iron content in parts per million.
MG	TEXT	(dry, whole-coal basis) Magnesium content in percent converted from Magnesium content in parts per million.
CA	TEXT	(dry, whole-coal basis) Calcium content in percent converted from Calcium content in parts per million.
NA	TEXT	(dry, whole-coal basis) Sodium content in percent converted from Sodium content in parts per million.
K	TEXT	(dry, whole-coal basis) Potassium content in percent converted from Potassium content in parts per million.

Field Name	Type	Description
TI	TEXT	(dry, whole-coal basis) Titanium content in percent converted from Titanium content in parts per million.
P	TEXT	(dry, whole-coal basis) Phosphorus content in parts per million.
AS	TEXT	(dry, whole-coal basis) Arsenic content in parts per million.
B	TEXT	(dry, whole-coal basis) Boron content in parts per million.
BA	TEXT	(dry, whole-coal basis) Barium content in parts per million.
BE	TEXT	(dry, whole-coal basis) Beryllium content in parts per million.
CD	TEXT	(dry, whole-coal basis) Cadmium content in parts per million.
CO	TEXT	(dry, whole-coal basis) Cobalt content in parts per million.
CR	TEXT	(dry, whole-coal basis) Chromium content in parts per million.
CU	TEXT	(dry, whole-coal basis) Copper content in parts per million.
F	TEXT	(dry, whole-coal basis) Fluorine content in parts per million.
GA	TEXT	(dry, whole-coal basis) Gallium content in parts per million.
GE	TEXT	(dry, whole-coal basis) Germanium content in parts per million.
HG	TEXT	(dry, whole-coal basis) Mercury content in parts per million.
LA	TEXT	(dry, whole-coal basis) Lanthanum content in parts per million.
LI	TEXT	(dry, whole-coal basis) Lithium content in parts per million.
MN	TEXT	(dry, whole-coal basis) Manganese content in parts per million.
MO	TEXT	(dry, whole-coal basis) Molybdenum content in parts per million.
NI	TEXT	(dry, whole-coal basis) Nickel content in parts per million.
PB	TEXT	(dry, whole-coal basis) Lead content in parts per million.
SB	TEXT	(dry, whole-coal basis) Antimony content in parts per million.
SC	TEXT	(dry, whole-coal basis) Scandium content in parts per million.
SE	TEXT	(dry, whole-coal basis) Selenium content in parts per million.
SR	TEXT	(dry, whole-coal basis) Strontium content in parts per million.
TH	TEXT	(dry, whole-coal basis) Thorium content in parts per million.
U	TEXT	(dry, whole-coal basis) Uranium content in parts per million.

Field Name	Type	Description
V	TEXT	(dry, whole-coal basis) Vanadium content in parts per million.
YB	TEXT	(dry, whole-coal basis) Ytterbium content in parts per million.
ZN	TEXT	(dry, whole-coal basis) Zinc content in parts per million.
ZR	TEXT	(dry, whole-coal basis) Zirconium content in parts per million.

GENERAL COMMENTS

The following information was received from Colin Treworgy (ISGS) and helps to clarify the Illinois State Geological Survey chemical data descriptions.

Each analysis in the Illinois coal quality database has a unique 12-character identifier called LABNO (laboratory number). The first character in the item LABNO is a letter assigned by the ISGS indicating the laboratory that analyzed the sample. The 11 characters following the letter are, in most cases, the identifier assigned by the original laboratory. If the laboratory number is unknown, the company drill hole number is used.

Letter Laboratory

A	USBM analyses, prior to ISGS "C" lab numbers, old ASTM methods
B	ISGS analyses of oil field brines
C	ISGS analyses of coal or coal-related material
D	ISGS isotopic analyses (e.g. carbon-14)
E	AMAX MIDWEST AREA LAB analyses of coal or coal-related material
G	ISGS analyses of gas
L	COALFIELD RESEARCH, INC. analyses of coal or coal-related material
M	CDM-Acculabs analyses of coal or coal-related material
O	ISGS analyses of oil or oil-related samples
R	ISGS analyses of rocks, soil, and other non-coal sediments
S	ISGS analyses of Devonian black shales
T	COMMERCIAL TESTING & ENGINEERING analyses of coal or coal-related material
U	Unknown laboratory
V	SUNNYVALE MINERALS analyses of coal or coal-related material
W	ISGS analyses of water
X	BLOOMINGTON EXPLORATION analyses of coal or coal-related material

Selected Stratigraphic Codes

2490	Danville Coal
2660	Herrin Coal
2790	Springfield Coal

Sampletype Codes

B	Bench sample undifferentiated
C	Column
W	Washed sample undifferentiated
B	Bench sample undifferentiated
C	Column
CB	Composite of bench or block samples; details in remarks
CC	Composite of column samples
FC	Channel of seam; impurities > 3/8" present, but excluded

Sampletype Codes

IC	Channel of seam; impurities > 3/8" present in sample
PC	Channel of seam; impurities > 3/8" not present
W	Washed sample undifferentiated
B	Bench sample undifferentiated
B1	Bench sample of the first bench of the seam
B2	Bench sample of the second bench of the seam
B3	Bench sample of the third bench of the seam
B4	Bench sample of the fourth bench of the seam
B5	Bench sample of the fifth bench of the seam
B6	Bench sample of the sixth bench of the seam
B7	Bench sample of the seventh bench of the seam
B8	Bench sample of the eighth bench of the seam
BD1	Bench sample of core - first bench of seam
BD2	Bench sample of core- second bench of seam
BD3	Bench sample of core- third bench of seam
BD4	Bench sample of core- fourth bench of seam
BD5	Bench sample of core- fifth bench of seam
BF	Channel of bench; impurities > 3/8" present but excluded
BF1	Channel of bench 1; impurities > 3/8" present but excluded.
BF2	Channel of bench 2; impurities > 3/8" present but excluded.
BF3	Channel of bench 3; impurities > 3/8" present but excluded.
BF4	Channel of bench 4; impurities > 3/8" present but excluded.
BF5	Channel of bench 5; impurities > 3/8" present but excluded.
BF6	Channel of bench 6; impurities > 3/8" present but excluded
BF7	Channel of bench 7; impurities > 3/8" present but excluded
BI	Channel of bench; impurities > 3/8" present in sample
BI1	Channel of bench 1; impurities > 3/8" present in sample
BI2	Channel of bench 2; impurities > 3/8" present in sample
BI3	Channel of bench 3; impurities > 3/8" present in sample
BI4	Channel of bench 4; impurities > 3/8" present in sample
BI5	Channel of bench 5; impurities > 3/8" present in sample
BL	Blend of 2 or more different coals, details in remarks
BP	Channel of bench; impurities > 3/8" not present
BP1	Channel of bench 1; impurities > 3/8" not present
BP2	Channel of bench 2; impurities > 3/8" not present
BP3	Channel of bench 3; impurities > 3/8" not present
BP4	Channel of bench 4; impurities > 3/8" not present
BP5	Channel of bench 5; impurities > 3/8" not present
BP6	Channel of bench 6; impurities > 3/8" not present
BP7	Channel of bench 7; impurities > 3/8" not present
BP8	Channel of bench 8; impurities > 3/8" not present
BP9	Channel of bench 9; impurities > 3/8" not present
C	Column
CB	Composite of bench or block samples
CC	Composite of column samples
CDC	Composite of drill core samples
CFC	Composite channel samples; impurities > 3/8" present but excluded
CGD	Composite of composited samples collected on grids
CIC	Composite of channel samples; impurities > 3/8" present in sample
CPC	Composite of channel samples; impurities > 3/8" not present
D C	Drill core
DC	Drill core
DF	Drill core of bench; impurities > 3/8" present, but excluded

Sampletype Codes

DFC	Drill core of seam
DI	Drill core of bench; impurities > 3/8" present in sample
DIC	Drill core of seam
DP	Drill core of bench; impurities > 3/8" not present
DP1	Drill core of bench 1; impurities > 3/8" not present
DP2	Drill core of bench 2; impurities > 3/8" not present
DP3	Drill core of bench 3; impurities > 3/8" not present
DPC	Drill core of seam
FC	Channel of seam; impurities > 3/8" present, but excluded
GB	Grab sample, details in remarks
Bn	Grab sample of strata 1..n (1 = top)
GD	Grid sample, composite of individual samples collected on a grid
IC	Channel of seam; impurities > 3/8" present in sample
LAB	Laboratory generated sample, details in remarks
PC	Channel of seam; impurities > 3/8" not present
RM	Run of mine, details in remarks
RP	Run of preparation plant, details in remarks
SP	Special sample, details in remarks
SZ	A particle size fraction; feed sample noted elsewhere.
UNN	Unknown type of sample, details in remarks
W	Washed sample undifferentiated
W1	Washed sample- first bench of seam
W2	Washed sample- second bench of seam
W3	Washed sample- third bench of seam
CDS	Calculated composite of sized core samples

The following publications document the analytical procedures used for most Illinois State samples.

Rees, O. W., 1966, Chemistry, Uses and Limitations of Coal Analyses: Illinois State Geological Survey Report of Investigations 220, 55 p. (This publication documents the proximate, ultimate, etc. analysis methodology)

Gluskoter, H. J., Ruch, R. R., Miller, W. G., Cahill, R. A., Dreher, G. B., and Kuhn, J. K., 1977, Trace Elements in Coal: Occurrences and Distribution: Illinois State Geological Survey Circular 499, 154 p. (The appendix at the end of this publication details element analyses methodology).