```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 438 entries, 0 to 446
Data columns (total 28 columns):
 #   Column   Non-Null Count  Dtype  
---  ------   --------------  -----  
 0   ZX       438 non-null    float64
 1   ZAB      438 non-null    float64
 2   ZAB.1    438 non-null    float64
 3   mX       438 non-null    float64
 4   mAB      438 non-null    float64
 5   ΔmAB     438 non-null    float64
 6   rowX     438 non-null    float64
 7   rowAB    438 non-null    float64
 8   ΔrowAB   438 non-null    float64
 9   colX     438 non-null    float64
 10  colAB    438 non-null    float64
 11  ΔcolAB   438 non-null    float64
 12  eX       438 non-null    float64
 13  eAB      438 non-null    float64
 14  ΔeAB     438 non-null    float64
 15  rX       438 non-null    float64
 16  rAB      438 non-null    float64
 17  ΔrAB     438 non-null    float64
 18  χX       438 non-null    float64
 19  χAB      438 non-null    float64
 20  ΔχAB     438 non-null    float64
 21  alatt    438 non-null    float64
 22  cv       438 non-null    float64
 23  κ˜grain  438 non-null    float64
 24  κtransf  438 non-null    float64
 25  κforest  438 non-null    float64
 26  κanh     438 non-null    float64
 27  gap      438 non-null    float64
dtypes: float64(28)
memory usage: 99.2 KB
{'Shape': (438, 28),
 'Data Type Counts': Index      3504
 ZX          3504
 ZAB         3504
 ZAB.1       3504
 mX          3504
 mAB         3504
 ΔmAB        3504
 rowX        3504
 rowAB       3504
 ΔrowAB      3504
 colX        3504
 colAB       3504
 ΔcolAB      3504
 eX          3504
 eAB         3504
 ΔeAB        3504
 rX          3504
 rAB         3504
 ΔrAB        3504
 χX          3504
 χAB         3504
 ΔχAB        3504
 alatt       3504
 cv          3504
 κ˜grain     3504
 κtransf     3504
 κforest     3504
 κanh        3504
```

```
 gap        3504
 dtype: int64,
 'Target Variables': ['cv'],
 'Description':                ZX         ZAB       ZAB.1          mX
mAB        ΔmAB  \
 count  438.000000  438.000000  438.000000  438.000000  438.000000  438.000000
 mean    43.191781   35.757991   22.958904  102.372922   83.586895   58.346461
 std     23.929334   15.614627   15.825656   62.399617   40.037376   41.638506
 min      3.000000    3.500000    1.000000    6.940000    7.980000    0.940000
 25%     27.000000   25.500000    9.000000   58.690000   57.400000   22.860000
 50%     44.000000   35.500000   20.000000  101.070000   81.870000   49.810000
 75%     56.750000   45.500000   31.750000  138.515000  106.490000   81.640000
 max     83.000000   78.000000   80.000000  208.980000  194.960000  202.040000

              rowX       rowAB      ΔrowAB        colX  ...          χX  \
 count  438.000000  438.000000  438.000000  438.000000  ...  438.000000
 mean     4.554795    4.380137    1.180365   10.840183  ...    1.400023
 std      1.162126    0.793217    0.906058    3.135685  ...    0.477015
 min      2.000000    2.000000    0.000000    1.000000  ...    0.450000
 25%      4.000000    4.000000    1.000000    9.000000  ...    1.050000
 50%      5.000000    4.500000    1.000000   10.000000  ...    1.120000
 75%      6.000000    5.000000    2.000000   14.000000  ...    1.900000
 max      6.000000    6.000000    4.000000   17.000000  ...    2.700000

              χAB        ΔχAB       alatt          cv     κ̃grain  \
 count  438.000000  438.000000  438.000000  438.000000  438.000000
 mean     1.177169    0.931826    6.246416   19.769612    0.901941
 std      0.416033    0.487780    0.638922    4.691092    0.423495
 min      0.380000    0.050000    4.910000    9.080000    0.230000
 25%      0.940000    0.612500    5.820000   16.400000    0.572500
 50%      1.290000    1.010000    6.120000   20.295000    0.860000
 75%      1.420000    1.315000    6.575000   22.827500    1.117500
 max      2.670000    1.970000    8.140000   33.600000    2.470000

            κtransf     κforest        κanh         gap
 count   438.000000  438.000000  438.000000  438.000000
 mean     96.922215   13.489429   18.231849    0.709406
 std     279.437386   10.018716   38.894186    0.610689
 min       0.010000    0.820000    0.000000    0.020000
 25%       4.607500    4.742500    4.317500    0.300000
 50%      38.965000    9.540000   12.000000    0.600000
 75%     106.412500   21.067500   23.552500    0.947500
 max    5059.980000   46.480000  748.190000    4.940000

 [8 rows x 28 columns],
 'Features': ['ZX',
  'ZAB',
  'ZAB.1',
  'mX',
  'mAB',
  'ΔmAB',
  'rowX',
  'rowAB',
  'ΔrowAB',
  'colX',
  'colAB',
  'ΔcolAB',
  'eX',
  'eAB',
  'ΔeAB',
  'rX',
  'rAB',
  'ΔrAB',
  'χX',
```

```
  'χAB',
  'ΔχAB',
  'alatt',
  'κ˜grain',
  'κtransf',
  'κforest',
  'κanh',
  'gap']}
```

```
Model,Best Parameters,Search Grid
RandomForestRegressor,"{'max_depth': None, 'max_features': 'sqrt',
'min_samples_leaf': 1, 'min_samples_split': 2, 'n_estimators':
200}","{'n_estimators': [50, 100, 200], 'max_depth': [None, 10, 20, 30],
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['auto', 'sqrt', 'log2']}"
GradientBoostingRegressor,"{'learning_rate': 0.1, 'max_depth': 3,
'min_samples_leaf': 1, 'min_samples_split': 10, 'n_estimators':
200}","{'n_estimators': [50, 100, 200], 'learning_rate': [0.01, 0.1, 0.2],
'max_depth': [3, 5, 7], 'min_samples_split': [2, 5, 10], 'min_samples_leaf': [1,
2, 4]}"
LinearRegression,"{'fit_intercept': True, 'positive': True}","{'fit_intercept':
[True, False], 'positive': [True, False]}"

Where Base models:{RandomForestRegressor,GradientBoostingRegressor}
meta_model:{LinearRegression}


Other models:{AdaBoost,DecisionTrees,ExtraTrees,GausianProcess}
```