Package 'iemiscdata'

January 10, 2024

Title Irucka Embry's Miscellaneous Data Collection

Version 1.0.1

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Depends R (>= 3.5.0)

Suggests install.load, iemisc (>= 1.0.1), rivr, rvest, data.table (>= 1.10.2), ggplot2 (>= 3.3.4), stringi, qdap, lubridate, knitr, snakecase, rmarkdown, USA.state.boundaries (>= 1.0.1), sfheaders, sf, dplyr, spelling, pander, units, round, anytime, mgsub, chem.databases

Description Miscellaneous data sets [Chemistry, Engineering Economics, Environmental/Water Resources Engineering, Nuclear Accidents, US Presidential Elections, and US Continental Congress Presidents].

URL https://gitlab.com/iembry/iemiscdata

BugReports https://gitlab.com/iembry/iemiscdata/-/issues

License GPL (>= 3)

Language en-US

Encoding UTF-8

LazyData true

LazyDataCompression xz

VignetteBuilder knitr

RoxygenNote 7.2.3

NeedsCompilation no

Author Irucka Embry [aut, cre]

Repository CRAN

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R topics documented:

civilian_nuclear_accidents_wiki *Civilian nuclear accidents (Wikipedia)*

Description

A table containing the civilian nuclear accidents.

Usage

```
civilian_nuclear_accidents_wiki
```

Format

A data.table data frame with 28 rows and 5 variables:

Date Date of the accident

Location Location of the accident

INES Level INES level

Type Type of accident

Description Description of accident or incident

Source

Wikimedia Foundation, Inc. Wikipedia, 3 September 2023, "List of civilian nuclear accidents", https://en.wikipedia.org/wiki/List_of_civilian_nuclear_accidents.

cn_agricultural *Table 2-2b: Runoff curve numbers for cultivated agricultural lands*

Description

A table containing curve numbers for cultivated, agricultural areas.

Usage

```
cn_agricultural
```

Format

A data.table data frame with 36 rows and 7 variables:

Cover type Type of agricultural ground cover

Treatment *2 Agricultural land treatment

Hydrologic condition *3 Hydrologic condition

Curve numbers for hydrologic soil group A Curve numbers for soil group A

Curve numbers for hydrologic soil group B Curve numbers for soil group B

Curve numbers for hydrologic soil group C Curve numbers for soil group C

Curve numbers for hydrologic soil group D Curve numbers for soil group D

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

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cn_agricultural_notes *Notes for Table 2-2b: Runoff curve numbers for cultivated agricultural lands*

Description

A table containing the notes for the curve numbers for cultivated, agricultural areas.

Usage

```
cn_agricultural_notes
```

Format

A data.table data frame with 5 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

`cn_arid_semiarid` *Table 2-2d: Runoff curve numbers for arid and semiarid rangelands*

Description

A table containing curve numbers for arid and semiarid areas.

Usage

```
cn_arid_semiarid
```

Format

A data.table data frame with 19 rows and 6 variables:

Cover type Type of agricultural ground cover

Hydrologic condition *2 Hydrologic condition

Curve numbers for hydrologic soil group A *3 Curve numbers for soil group A

Curve numbers for hydrologic soil group B Curve numbers for soil group B

Curve numbers for hydrologic soil group C Curve numbers for soil group C

Curve numbers for hydrologic soil group D Curve numbers for soil group D

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

`cn_arid_semiarid_notes`

Notes for Table 2-2d: Runoff curve numbers for arid and semiarid rangelands

Description

A table containing the notes for the curve numbers for arid and semiarid areas.

Usage

```
cn_arid_semiarid_notes
```

Format

A data.table data frame with 5 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

---

cn_other_agricultural *Table 2-2c: Runoff curve numbers for other agricultural lands*

Description

A table containing curve numbers for other agricultural areas.

Usage

```
cn_other_agricultural
```

Format

A data.table data frame with 19 rows and 7 variables:

Cover type Type of agricultural ground cover

Hydrologic condition *3 Hydrologic condition

Curve numbers for hydrologic soil group A Curve numbers for soil group A

Notes Any notes for soil group A

Curve numbers for hydrologic soil group B Curve numbers for soil group B

Curve numbers for hydrologic soil group C Curve numbers for soil group C

Curve numbers for hydrologic soil group D Curve numbers for soil group D

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

cn_other_agricultural_notes

Notes for Table 2-2c: Runoff curve numbers for other agricultural lands

Description

A table containing the notes for the curve numbers for other agricultural areas.

Usage

```
cn_other_agricultural_notes
```

Format

A data.table data frame with 11 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

cn_urban

Table 2-2a: Runoff curve numbers for urban areas

Description

A table containing curve numbers for urban areas.

Usage

```
cn_urban
```

Format

A data.table data frame with 34 rows and 6 variables:

Cover type and hydrologic condition Urban cover type and the hydrologic condition

Average percent impervious area *2 The average impervious area percent, if any

Curve numbers for hydrologic soil group A Curve numbers for soil group A

Curve numbers for hydrologic soil group B Curve numbers for soil group B

Curve numbers for hydrologic soil group C Curve numbers for soil group C

Curve numbers for hydrologic soil group D Curve numbers for soil group D

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

---

cn_urban_notes *Notes for Table 2-2a: Runoff curve numbers for urban areas*

Description

A table containing the notes for the curve numbers for urban areas.

Usage

```
cn_urban_notes
```

Format

A data.table data frame with 5 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

---

common_gases *Common Gaseous Elements and Compounds*

Description

A table containing common substances that are gases at 25 degrees C and 1.0 atm. The elements and compounds are in separate columns.

Usage

```
common_gases
```

Format

A data.table data frame with 23 rows and 4 variables:

Element_Formula Molecular formula of the element

Element_Name Name of the element

Compound_Formula Molecular formula of the compound

Compound_Name Name of the compound

Source

1. Chemistry LibreTexts, "Chapter 10.1: Gaseous Elements and Compounds", https://chem.libretexts.org/LibreTexts/Howard_University/General_Chemistry%3A_An_Atoms_First_Approach/Unit_4%3A__Thermochemistry/Chapter_10%3A_Gases/Chapter_10.1%3A_Gaseous_Elements_and_Compounds.
2. Gaseous composition of dry air, https://web.archive.org/web/20161222023409/https://eesc.columbia.edu/courses/ees/slides/climate/table_1.html. Retrieved thanks to the Internet Archive: Wayback Machine. Original data source: Mackenzie, F.T. and J.A. Mackenzie (1995) *Our changing planet*. Prentice-Hall, Upper Saddle River, NJ, p 288-307. (After Warneck, 1988; Anderson, 1989; Wayne, 1991.)

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common_gases_simp *Common Gaseous Elements and Compounds Simplified*

Description

A table containing common substances that are gases at 25 degrees C and 1.0 atm. This is the simplified table with the elements and compounds combined in a column.

Usage

```
common_gases_simp
```

Format

A data.table data frame with 35 rows and 2 variables:

Name Name of the element or compound

Formula Molecular formula of the element or compound

Source

1. Chemistry LibreTexts, "Chapter 10.1: Gaseous Elements and Compounds", https://chem.libretexts.org/LibreTexts/Howard_University/General_Chemistry%3A_An_Atoms_First_Approach/Unit_4%3A__Thermochemistry/Chapter_10%3A_Gases/Chapter_10.1%3A_Gaseous_Elements_and_Compounds.

2. Gaseous composition of dry air, https://web.archive.org/web/20161222023409/https://eesc.columbia.edu/courses/ees/slides/climate/table_1.html. Retrieved thanks to the Internet Archive: Wayback Machine. Original data source: Mackenzie, F.T. and J.A. Mackenzie (1995) *Our changing planet*. Prentice-Hall, Upper Saddle River, NJ, p 288-307. (After Warneck, 1988; Anderson, 1989; Wayne, 1991.)

`c_agricultural` *Table 2: Values of Runoff Coefficient C in Agricultural Areas*

Description

A table containing the C values for agricultural areas.

Usage

```
c_agricultural
```

Format

A data.table data frame with 14 rows and 4 variables:

Topography and Vegetation Site topography

Open Sandy Loam - Runoff Coefficient C C value for sandy loam soil

Clay and Silt Loam - Runoff Coefficient C C value for clay and silt loam soil

Tight Clay – Runoff Coefficient C C value for tight clay soil

Source

United States Department of Agriculture Natural Resources Conservation Service, "Hydrology Training Series: Module 206 D - Peak Discharge (Other Methods) Study Guide", page 16 of the PDF document, https://web.archive.org/web/20211018222532/https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1083019.pdf

---

`c_urban` *Table 1: Values of Runoff Coefficient C in Urban Areas*

Description

A table containing the C values for urban areas.

Usage

```
c_urban
```

Format

A data.table data frame with 33 rows and 5 variables:

Type of drainage area Drainage area type

Minimum Runoff Coefficient C Minimum C value

Average Runoff Coefficient C Average C value

Maximum Runoff Coefficient C Maximum C value

Runoff coefficient C Range of C values

Source

United States Department of Agriculture Natural Resources Conservation Service, "Hydrology Training Series: Module 206 D - Peak Discharge (Other Methods) Study Guide", page 16 of the PDF document, https://web.archive.org/web/20211018222532/https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1083019.pdf

---

dry_air *Gaseous Composition of Dry Air*

Description

A table containing the gaseous composition of dry air by mole percent.

Usage

```
dry_air
```

Format

A data.table data frame with 16 rows and 3 variables:

Name Name of the gas

Formula Chemical formula of the gas

Mole percent Fraction mole percent of the gas in dry air

Source

Gaseous composition of dry air, https://web.archive.org/web/20161222023409/https://eesc.columbia.edu/courses/ees/slides/climate/table_1.html. Retrieved thanks to the Internet Archive: Wayback Machine. Original data source: Mackenzie, F.T. and J.A. Mackenzie (1995) *Our changing planet*. Prentice-Hall, Upper Saddle River, NJ, p 288-307. (After Warneck, 1988; Anderson, 1989; Wayne, 1991.)

duh_gamma — *Table 16-5 Relationship of m and PRF for DUH developed from a Gamma equation*

Description

A table containing the relationship between m and PRF for the distributed unit hydrograph (DUH) developed from a Gamma equation.

Usage

```
duh_gamma
```

Format

A data.table data frame with 7 rows and 2 variables:

m "gamma equation shape factor"

PRF "peak rate factor (PRF)"

Source

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), *National Engineering Handbook*, "Part 630 Hydrology Chapter 16 Hydrographs", Pages 16-4, 16-9, 16-15, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17755.wba

elements — *Period Table of the Elements (PubChem & Wikipedia)*

Description

A table containing the combined periodic table of the elements from PubChem and Wikipedia.

Usage

```
elements
```

Format

A data.table data frame with 118 rows and 30 variables:

Name Name of the element

Atomic Number (Z) Atomic number of the element

Formula Chemical formula of the element

Standard Atomic weight (Da) Element atomic mass in Dalton unit

Atomic Mass (u) Element atomic mass in the unified atomic mass unit (u)

Atomic Radius (pm) Element atomic radius in pm

Electron Configuration Element electron configuration

Electronegativity Element electron configuration from Wikipedia

Electronegativity [PubChem] Element electron configuration from PubChem

Electron Affinity (eV) Element electron affinity

Ionization Energy (eV) Element ionization energy

Oxidation States Element oxidation states

Period Period number of the element

Group Group number of the element

Group Name Name of the element group

Group Block Group block name of the element

Standard State at Room Temperature (Wikipedia) Standard state of the element at room temperature

Standard State Standard state of the element at standard temperature and pressure (STP)

Density (g/cm^3) Element density in grams / cubic centimeters

Density (g/cm^3) [PubChem] Element density in grams / cubic centimeters using PubChem data

Melting Point (K) Element melting point in Kelvin

Melting Point (K) [PubChem] Element melting point in Kelvin using PubChem data

Boiling Point (K) Element boiling point in Kelvin

Boiling Point (K) [PubChem] Element boiling point in Kelvin using PubChem data

Specific Heat Capacity (J/g K) Specific heat capacity of the element in Joules / grams Kelvin

Abundance in Earth's crust (mg/kg) Amount present in the Earth's crust

CPK Hex Color Corey-Pauling-Koltun Hex color for each element)

Origin Origin of the element

Origin of name Origin of the element name

Year Discovered Year the element was discovered

Source

1. PubChem [Internet]. Bethesda (MD): National Library of Medicine (US), National Center for Biotechnology Information; 2004-. Periodic Table of Elements; [cited 2023 May 12]. Available from: https://pubchem.ncbi.nlm.nih.gov/periodic-table/.
2. Wikimedia Foundation, Inc. Wikipedia, 18 September 2023, "List of chemical elements", https://en.wikipedia.org/wiki/List_of_chemical_elements.

`elements_pubchem` *Period Table of the Elements (PubChem)*

Description

A table containing the periodic table of the elements from PubChem.

Usage

```
elements_pubchem
```

Format

A data.table data frame with 118 rows and 17 variables:

Name Name of the element

Atomic Number (Z) Atomic number of the element

Formula Chemical formula of the element

Atomic Mass (u) Element atomic mass in the unified atomic mass unit (u)

CPK Hex Color Corey-Pauling-Koltun Hex color for each element)

Electron Configuration Element electron configuration

Electronegativity Element electronegativity

Atomic Radius (pm) Element atomic radius

Ionization Energy (eV) Element ionization energy

Electron Affinity (eV) Element electron affinity

Oxidation States Element oxidation states

Standard State Standard state of the element at standard temperature and pressure (STP)

Melting Point (K) Element melting point in Kelvin

Boiling Point (K) Element boiling point in Kelvin

Density (g/cm^3) Element density in grams / cubic centimeters

Group Name Name of the element group

Year Discovered Year the element was discovered

Source

PubChem [Internet]. Bethesda (MD): National Library of Medicine (US), National Center for Biotechnology Information; 2004-. Periodic Table of Elements; [cited 2023 May 12]. Available from: https://pubchem.ncbi.nlm.nih.gov/periodic-table/.

`elements_wiki` *Period Table of the Elements (Wikipedia)*

Description

A table containing the periodic table of the elements from Wikipedia.

Usage

```
elements_wiki
```

Format

A data.table data frame with 118 rows and 16 variables:

Name Name of the element

Atomic Number (Z) Atomic number of the element

Formula Chemical formula of the element

Standard Atomic weight (Da) Element atomic mass in Dalton unit

Origin of name Origin of the element name

Group Group number of the element

Group Block Group block name of the element

Period Period number of the element

Density (g/cm^3) Element density in grams / cubic centimeters

Melting Point (K) Element melting point in Kelvin

Boiling Point (K) Element boiling point in Kelvin

Specific Heat Capacity (J/g K) Specific heat capacity of the element in Joules / grams Kelvin

Electronegativity Element electronegativity

Abundance in Earth's crust (mg/kg) Amount present in the Earth's crust

Origin Origin of the element

Standard State at Room Temperature Standard state of the element at room temperature

Source

Wikimedia Foundation, Inc. Wikipedia, 18 September 2023, "List of chemical elements", https://en.wikipedia.org/wiki/List_of_chemical_elements.

`exceptional_tn_waters` *Known Exceptional Tennessee Waters and Outstanding National Resource Waters*

Description

A table containing the exceptional or outstanding national resource waters in Tennessee.

Usage

```
exceptional_tn_waters
```

Format

A data.table data frame with 3,101 rows and 12 variables:

HUC HUC number

Watershed Name Name of the watershed

Waterbody Name of the waterbody

County Name of the Tennessee county

Description Description of the waterbody

Basis for Inclusion Reason for exceptional water status

From_Lat Begin latitude

To_Lat End latitude

From_Long Begin longitude

To_Long End longitude

Inclusion Date Date of inclusion

Revision Date Date of revision, if any

Source

Tennessee Department of Environment and Conservation (TDEC) Division of Water Resources (DWR), Accessed 19 September 2023, The Known Exceptional Tennessee Waters and Outstanding National Resource Waters. https://archive.vn/FxfqY. Used the archive.today webpage capture for this URL for CRAN acceptance.

exceptional_tn_waters_abbrv

Abbreviations Used in the Known Exceptional Tennessee Waters and Outstanding National Resource Waters

Description

A table containing the abbreviations used in the exceptional or outstanding national resource waters in Tennessee table.

Usage

```
exceptional_tn_waters_abbrv
```

Format

A data.table data frame with 17 rows and 2 variables:

Abbreviation Abbreviation used in the Known Exceptional Tennessee Waters and Outstanding National Resource Waters table

Full Name Full name for the abbreviation

Source

Tennessee Department of Environment and Conservation (TDEC) Division of Water Resources (DWR), Accessed 19 September 2023, The Known Exceptional Tennessee Waters and Outstanding National Resource Waters. https://archive.vn/FxfqY. Used the archive.today webpage capture for this URL for CRAN acceptance.

Fp

Table 4-2: Adjustment factor (Fp) for pond and swamp areas that are spread throughout the watershed

Description

A table containing the adjustment factor for percent of pond and swamp areas.

Usage

```
Fp
```

Format

A data.table data frame with 5 rows and 2 variables:

Percentage of pond and swamp areas Percent of pond and swamp areas

Fp Adjustment factor

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

---

`Fukushima_2011_FieldMeasurements_5`

US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Field Team Radiological Measurements

---

Description

A table containing data after the radiation leaks from the nuclear power plants in Japan.

Usage

```
Fukushima_2011_FieldMeasurements_5
```

Format

A data.table data frame with 4,335 rows and 16 variables:

ID Identification
Measurement Date Date of measurement
Latitude Latitude for the sample location
Longitude Longitude for the sample location
Fixed? Is the location fixed?
Distance(miles) Distance in miles
Bearing Bearing for the location
Direction Direction for the location
Type Type of radiation
Derived? Derived radiation value
Value Value for the radiation
Unit Unit of measurement for radiation value
Source Source of data
Description Description
Meter Name of meter used
Probe Name of probe used

Source

United States (US) Department of Energy (DOE)/National Nuclear Security Administration (NNSA), "US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Field Team Radiological Measurements", https://web.archive.org/web/20160617002257/https://catalog.data.gov/dataset/us-doe-nnsa-and-dod-response-to-2011-fukushima-incident-field-team-radiological-measuremen-33914. Retrieved thanks to the Internet Archive: Wayback Machine

---

`Fukushima_2011_FieldMeasurements_5_Metadata`
US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Field Team Radiological Measurements Metadata

---

Description

A list containing the metadata for US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Field Team Radiological Measurements.

Usage

```
Fukushima_2011_FieldMeasurements_5_Metadata
```

Format

A list with 21 objects

Source

United States (US) Department of Energy (DOE)/National Nuclear Security Administration (NNSA), "US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Field Team Radiological Measurements", https://web.archive.org/web/20160617002257/https://catalog.data.gov/dataset/us-doe-nnsa-and-dod-response-to-2011-fukushima-incident-field-team-radiological-measuremen-33914. Retrieved thanks to the Internet Archive: Wayback Machine

---

`Fukushima_2011_FieldSampleAirResults_2`
US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Air Samples

---

Description

A table containing data after the radiation leaks from the nuclear power plants in Japan.

Usage

```
Fukushima_2011_FieldSampleAirResults_2
```

Format

A data.table data frame with 8,378 rows and 23 variables:

Analysis Id Identification for the analysis

Sample Id Identification for the sample

Sample# Sample number

Type Source of sample

Fixed? Is the type fixed?

Latitude Latitude for the sample location

Longitude Longitude for the sample location

Distance(miles) Distance in miles

Bearing Bearing for the location

Direction Direction for the location

Collection Date Date of collection

Source Source

Description Description

Filter Type Filter type

Volume Volume

Volume Unit Unit of measurement for volume

Uncertainty% Percent of uncertainty

MDA MDA

Method Code Method code

Moisture% Moisture percent

Nuclide Nuclide

Result Result

Unit Unit for the result

Source

United States (US) Department of Energy (DOE)/National Nuclear Security Administration (NNSA),
"US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Air Samples",
https://web.archive.org/web/20201108073914/https://catalog.data.gov/dataset/us-doe-nnsa-and-dod-res
Retrieved thanks to the Internet Archive: Wayback Machine

`Fukushima_2011_FieldSampleAirResults_2_Metadata`
US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Air Samples Metadata

---

Description

A list containing the metadata for US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Air Samples.

Usage

```
Fukushima_2011_FieldSampleAirResults_2_Metadata
```

Format

A list with 20 objects

Source

United States (US) Department of Energy (DOE)/National Nuclear Security Administration (NNSA), "US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Air Samples", https://web.archive.org/web/20201108073914/https://catalog.data.gov/dataset/us-doe-nnsa-and-dod-res
Retrieved thanks to the Internet Archive: Wayback Machine

`Fukushima_2011_FieldSampleInstrumentResults`
US DOE/NNSA Response to 2011 Fukushima Incident: Instrument Samples (InSitu Measurements)

Description

A table containing data after the radiation leaks from the nuclear power plants in Japan.

Usage

```
Fukushima_2011_FieldSampleInstrumentResults
```

Format

A data.table data frame with 2,581 rows and 24 variables:

Analysis Id Identification for the analysis

Sample Id Identification for the sample

Sample# Sample number

Type Source of sample

Fixed? Is the type fixed?

Latitude Latitude for the sample location

Longitude Longitude for the sample location

Distance(miles) Distance in miles

Bearing Bearing for the location

Direction Direction for the location

Collection Date Date of collection

Source Source

Description Description

Spectra File Spectra file

Sampling Time Time of the sampling

Live Time Live time

Instrument Height Instrument height

Uncertainty% Percent of uncertainty

MDA MDA

Method Code Method code

Moisture% Moisture percent

Nuclide Nuclide

Result Result

Unit Unit for the result

Source

United States (US) Department of Energy (DOE)/National Nuclear Security Administration (NNSA), "US DOE/NNSA Response to 2011 Fukushima Incident: Instrument Samples (InSitu Measurements)", https://web.archive.org/web/20160630225626/https://catalog.data.gov/dataset/us-doe-nnsa-response-to-2011-fukushima-incident-instrument-samples-insitu-measurements-09ee4. Retrieved thanks to the Internet Archive: Wayback Machine

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`Fukushima_2011_FieldSampleInstrumentResults_Metadata`

US DOE/NNSA Response to 2011 Fukushima Incident: Instrument Samples (InSitu Measurements) Metadata

---

Description

A list containing the metadata for US DOE/NNSA Response to 2011 Fukushima Incident: Instrument Samples (InSitu Measurements).

Usage

```
Fukushima_2011_FieldSampleInstrumentResults_Metadata
```

Format

A list with 20 objects

Source

United States (US) Department of Energy (DOE)/National Nuclear Security Administration (NNSA), "US DOE/NNSA Response to 2011 Fukushima Incident: Instrument Samples (InSitu Measurements)", https://web.archive.org/web/20160630225626/https://catalog.data.gov/dataset/us-doe-nnsa-response-to-2011-fukushima-incident-instrument-samples-insitu-measurements-09ee4. Retrieved thanks to the Internet Archive: Wayback Machine

---

Fukushima_2011_FieldSampleSoilResults_2

US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Soil Samples

---

Description

A table containing data after the radiation leaks from the nuclear power plants in Japan.

Usage

```
Fukushima_2011_FieldSampleSoilResults_2
```

Format

A data.table data frame with 2,032 rows and 25 variables:

Analysis Id Identification for the analysis

Sample Id Identification for the sample

Sample# Sample number

Type Source of sample

Fixed? Is the type fixed?

Latitude Latitude for the sample location

Longitude Longitude for the sample location

Distance(miles) Distance in miles

Bearing Bearing for the location

Direction Direction for the location

Collection Date Date of collection

Source Source

Description Description

Weight Filter type

Weight Unit Volume

Depth Unit of measurement for volume

Surface Area(cm2) Volume

Shape Unit of measurement for volume

Uncertainty% Percent of uncertainty

MDA MDA

Method Code Method code

Moisture% Moisture percent

Nuclide Nuclide

Result Result

Unit Unit for the result

Source

United States (US) Department of Energy (DOE)/National Nuclear Security Administration (NNSA), "US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Soil Samples", https://web.archive.org/web/20160617000359/https://catalog.data.gov/dataset/us-doe-nnsa-and-dod-res
Retrieved thanks to the Internet Archive: Wayback Machine

`Fukushima_2011_FieldSampleSoilResults_2_Metadata`
US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Soil Samples Metadata

---

Description

A list containing the metadata for US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Soil Samples.

Usage

```
Fukushima_2011_FieldSampleSoilResults_2_Metadata
```

Format

A list with 20 objects

Source

United States (US) Department of Energy (DOE)/National Nuclear Security Administration (NNSA), "US DOE/NNSA and DoD Response to 2011 Fukushima Incident: Radiological Soil Samples", https://web.archive.org/web/20160617000359/https://catalog.data.gov/dataset/us-doe-nnsa-and-dod-res
Retrieved thanks to the Internet Archive: Wayback Machine

`gases` *Gases at Standard Temperature and Pressure (STP) – Wikipedia*

Description

A table containing gases at standard conditions.

Usage

```
gases
```

Format

A data.table data frame with 540 rows and 6 variables:

Name Name of the gas

Formula Chemical formula of the gas

Boiling pt (°C) Boiling point of the gas in degrees Celsius

Melting pt (°C) Melting point of the gas in degrees Celsius

Molecular weight Molecular weight of the gas

CAS CAS number

Source

Wikimedia Foundation, Inc. Wikipedia, 26 August 2023, "List of gases", https://en.wikipedia.org/wiki/List_of_gases.

`gases_plain` *Gases at Standard Temperature and Pressure (STP) – Wikipedia – Plain*

Description

A table containing gases at standard conditions without the brackets next to the gas name in the Name column.

Usage

```
gases_plain
```

Format

A data.table data frame with 540 rows and 6 variables:

Name Name of the gas

Formula Chemical formula of the gas

Boiling pt (°C) Boiling point of the gas in degrees Celsius

Melting pt (°C) Melting point of the gas in degrees Celsius

Molecular weight Molecular weight of the gas

CAS CAS number

Source

Wikimedia Foundation, Inc. Wikipedia, 26 August 2023, "List of gases", https://en.wikipedia.org/wiki/List_of_gases.

---

gases_table *Gaseous Elements and Compounds*

Description

A table containing gases at standard conditions. This table is derived from dry_air, gases_plain, and common_gases_simp.

Usage

```
gases_table
```

Format

A data.table data frame with 534 rows and 4 variables:

Name Name of the gas

Formula Chemical formula of the gas

Molecular weight Molecular weight of the gas

CAS CAS number

Source

1. Chemistry LibreTexts, "Chapter 10.1: Gaseous Elements and Compounds", https://chem.libretexts.org/LibreTexts/Howard_University/General_Chemistry%3A_An_Atoms_First_Approach/Unit_4%3A__Thermochemistry/Chapter_10%3A_Gases/Chapter_10.1%3A_Gaseous_Elements_and_Compounds.

2. Gaseous composition of dry air, https://web.archive.org/web/20161222023409/https://eesc.columbia.edu/courses/ees/slides/climate/table_1.html. Retrieved thanks to the Internet Archive: Wayback Machine. Original data source: Mackenzie, F.T. and J.A. Mackenzie (1995) *Our changing planet*. Prentice-Hall, Upper Saddle River, NJ, p 288-307. (After Warneck, 1988; Anderson, 1989; Wayne, 1991.)
3. Wikimedia Foundation, Inc. Wikipedia, 26 August 2023, "List of gases", https://en.wikipedia.org/wiki/List_of_gases.

`gas_constant` *Gas Constant in Various Units*

Description

A table containing the gas constant with various units.

Usage

```
gas_constant
```

Format

A data.table data frame with 26 rows and 2 variables:

R Values Gas constant (R) values

Units Unit for the R value

Source

Wikimedia Foundation, Inc. Wikipedia, 4 January 2022, "Gas constant", https://en.wikipedia.org/wiki/Gas_constant.

`greenhouse_gases_cloudy_notes_wikipedia`
Greenhouse Gases – Percent Contribution to Total Greenhouse Effect Notes (Wikipedia)

Description

A table containing the notes associated with the greenhouse gas contribution table.

Usage

```
greenhouse_gases_cloudy_notes_wikipedia
```

Format

A data.table data frame with 3 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

Wikimedia Foundation, Inc. Wikipedia, 25 August 2023, "Greenhouse gas", https://en.wikipedia.org/wiki/Greenhouse_gas.

---

greenhouse_gases_cloudy_sky

Clear and cloudy sky radiative forcing (W m-2) and the contribution of individual absorbers to this total

---

Description

A table containing the "clear and cloudy sky radiative forcing".

Usage

```
greenhouse_gases_cloudy_sky
```

Format

A data.table data frame with 7 rows and 6 variables:

Gas Gas Name

Individual contribution (W m^-2) Individual contribution in W m^-2 with a clear sky

Individual contribution - Cloudy sky (W m^-2) Individual contribution in W m^-2 with a cloudy sky

Combined with overlap effects (W m^-2) Combined with overlap effects in W m^-2 with a clear sky

Combined with overlap effects - Cloudy sky (W m^-2) Combined with overlap effects in W m^-2 with a cloudy sky

Percent contribution clear sky (W m^-2) Percent contribution clear sky in W m^-2

Source

"Earth's Annual Global Mean Energy Budget" By J. T. Kiehl and Kevin E. Trenberth, *Bulletin of the American Meteorological Society*, Vol. 78, No. 2, February 1997, pages 197-208, https://web.archive.org/web/20060330013311/http://www.atmo.arizona.edu/students/courselinks/spring04/atmo451b/pdf/RadiationBudget.pdf. Retrieved thanks to the Internet Archive: Wayback Machine. Table 3. Clear and cloudy sky radiative forcing (W m-2) and the contribution of individual absorbers to this total. Cloudy sky results are in parentheses from the Reference

---

`greenhouse_gases_cloudy_wikipedia`

Greenhouse Gases – Percent Contribution to Total Greenhouse Effect (Wikipedia)

Description

A table containing the greenhouse gas contribution table.

Usage

```
greenhouse_gases_cloudy_wikipedia
```

Format

A data.table data frame with 6 rows and 5 variables:

Contributor Greenhouse gas contributor name

K&T (1997) – Clear Sky Greenhouse gas individual contribution with a clear sky according to K&T

K&T (1997) – With Clouds Greenhouse gas individual contribution with a cloudy sky according to K&T

Schmidt (2010) – Clear Sky Greenhouse gas individual contribution with a clear sky according to Schmidt

Schmidt (2010) – With Clouds Greenhouse gas individual contribution with a cloudy sky according to Schmidt

Source

Wikimedia Foundation, Inc. Wikipedia, 25 August 2023, "Greenhouse gas", https://en.wikipedia.org/wiki/Greenhouse_gas.

`greenhouse_gases_contributions`

Greenhouse Gases – Percent Contribution to Total Greenhouse Effect (NASA)

Description

A table containing the percent contribution to the total greenhouse effect.

Usage

```
greenhouse_gases_contributions
```

Format

A data.table data frame with 4 rows and 3 variables:

Gas_Name Name of the gas

Gas_Formula Chemical formula of the gas

Greenhouse Gas Contributions (approximate percent values) Individual greenhouse contribution by percent

Source

NASA Goddard Space Flight Center: EOS Project Science Office: Earth Observatory. Jun 16, 2011, "Effects of Changing the Carbon Cycle", https://earthobservatory.nasa.gov/features/CarbonCycle/page5.php.

---

hsg *Table from Appendix A: Hydrologic Soil Groups (HSGs)*

Description

A table containing the hydrologic soil groups.

Usage

```
hsg
```

Format

A data.table data frame with 4 rows and 2 variables:

Hydrologic Soil Group (HSG) Hydrologic soil group

Soil textures Texture of soil

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

hsg_definitions *Table from Appendix A: Definitions of Hydrologic Soil Groups (HSGs)*

Description

A table containing the definitions of the hydrologic soil groups.

Usage

```
hsg_definitions
```

Format

A data.table data frame with 4 rows and 2 variables:

Definitions Definition of the hydrologic soil groups

Drainage Drainage information for the hydrologic soil groups, if any

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

i1 *1 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i1
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

`i10` *10 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i10
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

`i12` *12 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i12
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i15 *15 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i15
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i18 *18 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i18
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i1_50 *1 1/2 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i1_50
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i2 *2 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i2
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i20 *20 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i20
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i25 *25 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i25
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i3 *3 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i3
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i4 *4 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i4
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i5 *5 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i5
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i6 *6 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i6
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i7 *7 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i7
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i8 *8 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i8
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

i9 *9 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i9
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

Ia — *Table 4-1: Ia values for runoff Curve number*

Description

A table containing curve numbers for initial abstraction.

Usage

```
Ia
```

Format

A data.table data frame with 59 rows and 2 variables:

Curve number Runoff curve number

Ia (in) Initial abstraction in inches

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

i_25 — *1/4 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i_25
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

`i_50` *1/2 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i_50
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

`i_75` *3/4 Percent Effective Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "effective interest rate" and period.

Usage

```
i_75
```

Format

A data.table data frame with 34 rows and 10 variables:

n The "number of interest periods"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

A/F Annual value given future value

A/P Annual value given present value

P/G Present value given gradient

A/G Annual value given gradient

n The "number of interest periods"

Source

1. William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.
2. Masoud Olia, Ph.D., P.E. and Contributing Authors, *Barron's FE (Fundamentals of Engineering Exam)*, 3rd Edition, Hauppauge, New York: Barron's Educational Series, Inc., 2015, page 178-187.

military_nuclear_accidents_wiki

Military nuclear accidents (Wikipedia)

Description

A table containing the military nuclear accidents.

Usage

```
military_nuclear_accidents_wiki
```

Format

A data.table data frame with 76 rows and 4 variables:

Date Date of the accident

Location Location of the accident

Type Type of accident

Description Description of accident or incident

Source

Wikimedia Foundation, Inc. Wikipedia, 15 September 2023, "List of military nuclear accidents", https://en.wikipedia.org/wiki/List_of_military_nuclear_accidents.

nchannel

Manning's n for Channels

Description

A table containing the type of channel and description along with the minimum, normal, and maximum value of n, if it exists. n is the "Gauckler- Manning coefficient (commonly called Manning's n)" and it's dimensionless. Source: Manning formula.

Usage

```
nchannel
```

Format

A data.table data frame with 97 rows and 4 variables:

Type of Channel and Description Type of channel name and any descriptive information

Minimum n Minimum n value

Normal n Normal n value

Maximum n Maximum n value

Source

1. This data is from FishXing Version 3.0 Beta (2006) by Michael Furniss, Michael Love, Susan Firor, Kathleen Moynan, Antonio Llanos, Jeff Guntle, and Robert Gubernick. See https://www.fsl.orst.edu/geowater/FX3/help/8_Hydraulic_Reference/Mannings_n_Tables.htm. The original data source is Ven Te Chow, *Open-Channel Hydraulics*, New York City, York: McGraw-Hill, 1959.
2. Wikimedia Foundation, Inc. Wikipedia, 26 November 2015, "Manning formula", https://en.wikipedia.org/wiki/Manning_formula.

---

nmetalpipe *Manning's n for Corrugated Metal Pipe*

Description

A table containing the type of channel and description along with the minimum, normal, and maximum value of n, if it exists. n is the "Gauckler- Manning coefficient (commonly called Manning's n)" and it's dimensionless. Source: Manning formula.

Usage

```
nmetalpipe
```

Format

A data.table data frame with 25 rows and 2 variables:

Type of Pipe and Diameter and Corrugation Dimension Name of the type of conduit and any descriptive information

n Manning's n

Source

1. This data is from FishXing Version 3.0 Beta (2006) by Michael Furniss, Michael Love, Susan Firor, Kathleen Moynan, Antonio Llanos, Jeff Guntle, and Robert Gubernick. See https://www.fsl.orst.edu/geowater/FX3/help/8_Hydraulic_Reference/Mannings_n_Tables.htm. The original data source is Ven Te Chow, *Open-Channel Hydraulics*, New York City, York: McGraw-Hill, 1959.
2. Wikimedia Foundation, Inc. Wikipedia, 26 November 2015, "Manning formula", https://en.wikipedia.org/wiki/Manning_formula.

norfolk_southern_epoh *United States EPA East Palestine, Ohio Norfolk Southern Train 32N Cargo List*

Description

A table containing the cargo list for Norfolk Southern Train 32N.

Usage

```
norfolk_southern_epoh
```

Format

A data.table data frame with 52 rows and 9 variables:

Line # Car line number on the train

Train Car ID Train car identification

Load/Empty Loaded or empty car

Car Type Type of car

Commodity Commodity in the car

Tank Car Specification Tank car specification

UN ID UN identification

Hazardous Class Class of hazardous material

Status of Car Status of the car after the derailment

Source

US Environmental Protection Agency (EPA), "TRAIN 32N cargo list", https://web.archive.org/web/20230828020903/https://www.epa.gov/system/files/documents/2023-02/TRAIN%2032N%20-%20EAST%20PALESTINE%20-%20derail%20list%20Norfolk%20Southern%20document.pdf. Used the Internet Archive: Wayback Machine archived version for acceptance into CRAN.

npartfull *Manning's n for Closed Conduits Flowing Partly Full*

Description

A table containing the type of channel and description along with the minimum, normal, and maximum value of n, if it exists. n is the "Gauckler- Manning coefficient (commonly called Manning's n)" and it's dimensionless. Source: Manning formula.

Usage

```
npartfull
```

Format

A data.table data frame with 38 rows and 4 variables:

Type of Conduit and Description Type of conduit name and any descriptive information

Minimum n Minimum n value

Normal n Normal n value

Maximum n Maximum n value

Source

1. This data is from FishXing Version 3.0 Beta (2006) by Michael Furniss, Michael Love, Susan Firor, Kathleen Moynan, Antonio Llanos, Jeff Guntle, and Robert Gubernick. See https://www.fsl.orst.edu/geowater/FX3/help/8_Hydraulic_Reference/Mannings_n_Tables.htm. The original data source is Ven Te Chow, *Open-Channel Hydraulics*, New York City, York: McGraw-Hill, 1959.
2. Wikimedia Foundation, Inc. Wikipedia, 26 November 2015, "Manning formula", https://en.wikipedia.org/wiki/Manning_formula.

---

nsheetflow *Table 3-1: Roughness coefficients (Manning's n) for sheet flow*

Description

A table containing Manning's roughness coefficient for sheet flow.

Usage

```
nsheetflow
```

Format

A data.table data frame with 12 rows and 2 variables:

Surface description Description of the surface

"n *1 Manning's roughness coefficient

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, page 3-3, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

nsheetflow_notes *Notes for Table 16-2 Computation of coordinates for unit hydrograph for use in example 16-1*

Description

A table containing the notes for Manning's roughness coefficient for sheet flow.

Usage

```
nsheetflow_notes
```

Format

A data.table data frame with 3 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, page 3-3, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

nuclear_accidents *Nuclear & Radiation Accidents and incidents (The Guardian)*

Description

A table containing nuclear & radiation accidents and incidents since 1952.

Usage

```
nuclear_accidents
```

Format

A data.table data frame with 33 rows and 6 variables:

Date Year of the accident

Incident Name of the incident

INES rating INES level

Country Country where the accident took place

Location Location of the accident

IAEA description IAEA description of accident or incident

Source

The Guardian, "Nuclear power plant accidents: listed and ranked since 1952: How many nuclear power plants have had accidents and incidents?", https://www.theguardian.com/news/datablog/2011/mar/14/nuclear-power-plant-accidents-list-rank.

`nuclear_accidents_ranked`

Ranked Nuclear & Radiation Accidents and incidents (The Guardian)

Description

A table containing the military nuclear accidents.

Usage

```
nuclear_accidents_ranked
```

Format

A data.table data frame with 7 rows and 6 variables:

Level Ranked level of severity of the accident

Definition Definition associated with each level

People and environment Any harm to Human Beings and/or the surrounding environment

Radiological barriers & control Any radiological barriers and/or controls

Defence in depth Defensive barriers described

Example An example of an accident or incident at the given level

Source

The Guardian, "Nuclear power plant accidents: listed and ranked since 1952: How many nuclear power plants have had accidents and incidents?", https://www.theguardian.com/news/datablog/2011/mar/14/nuclear-power-plant-accidents-list-rank.

nuclear_accidents_wiki

Nuclear and radiation accidents and incidents (Wikipedia)

Description

A table containing nuclear and radiation accidents and incidents.

Usage

```
nuclear_accidents_wiki
```

Format

A data.table data frame with 28 rows and 6 variables:

Date Date of the accident

Location Location of the accident

Description Description of accident or incident

Fatalities Number of people that died

Cost (in millions 2006 US$) Cost in millions of 2006 US dollars

INES rating) INES level

Source

Wikimedia Foundation, Inc. Wikipedia, 5 September 2023, "Nuclear and radiation accidents and incidents", https://en.wikipedia.org/wiki/Nuclear_and_radiation_accidents_and_incidents.

nuclear_power_accidents_country_wiki

Nuclear power accidents by country (Wikipedia)

Description

A table containing the nuclear power accidents by country.

Usage

```
nuclear_power_accidents_country_wiki
```

Format

A data.table data frame with 133 rows and 11 variables:

Date Date of the accident

Country Country where the accident took place

Location Location of the accident

Description Description of accident or incident

INES rating) INES level

Fatalities Number of people that died

Fatalities 180 Number of people that died

Victims Number of people that had adverse health effects, but did not die

Cost (in millions 2006 US$) Cost in millions of 2006 US dollars

Cost 130,000,000 million dollars Cost

Cost Cost

Source

Wikimedia Foundation, Inc. Wikipedia, 1 September 2023, "List of nuclear power accidents by country", https://en.wikipedia.org/wiki/List_of_nuclear_power_accidents_by_country.

---

pres_cont_congress *United States President of the Continental Congress*

Description

A table containing the US Presidents of the Continental Congress.

Usage

```
pres_cont_congress
```

Format

A data.table data frame with 16 rows and 9 variables:

Name The name of the President

Year Born The year the President was born

Year Died The year the President died

State/colony The State/Colony where the President resided

Term Begin Beginning date of the term

Term End Ending date of the term

Term Beginning to ending date of the term

Length Length of the term

Previous position Previous position prior to being President

Source

Wikimedia Foundation, Inc. Wikipedia, 18 August 2023, "President of the Continental Congress", https://en.wikipedia.org/wiki/President_of_the_Continental_Congress.

`pres_elect` *Wikipedia Table of the United States of America Presidential Elections*

Description

A table containing the results of the US Presidential Elections.

Usage

```
pres_elect
```

Format

A data.table data frame with 220 rows and 8 variables:

Year Year of the election

Party Political party

Presidential candidate Presidential Candidate for the Political Party

Vice presidential candidate Vice Presidential Candidate for the Political Party, if any

Popular vote Number of popular votes

Popular vote % % of popular votes

Electoral votes Number of electoral votes

Notes Any notes – refer to the Reference for the notes

Source

Wikimedia Foundation, Inc. Wikipedia, Accessed on 17 May 2023, United States presidential election. https://en.wikipedia.org/wiki/United_States_presidential_election. This page was last edited on 15 May 2023

r10 *10 Percent Nominal Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "nominal annual interest rate, compounded continuously" and period.

Usage

```
r10
```

Format

A data.table data frame with 44 rows and 6 variables:

n The "number of periods (years)"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

n The "number of periods (years)"

Source

William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.

r20 *20 Percent Nominal Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "nominal annual interest rate, compounded continuously" and period.

Usage

```
r20
```

Format

A data.table data frame with 44 rows and 6 variables:

n The "number of periods (years)"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

n The "number of periods (years)"

Source

William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.

`r8` *8 Percent Nominal Interest Table (Engineering Economy)*

Description

A table containing the number of periods and the corresponding engineering economic value given the "nominal annual interest rate, compounded continuously" and period.

Usage

```
r8
```

Format

A data.table data frame with 44 rows and 6 variables:

n The "number of periods (years)"

F/P Future value given present value

P/F Present value given future value

F/A Future value given annual value

P/A Present value given annual value

n The "number of periods (years)"

Source

William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling, *Engineering Economy*, Fourteenth Edition, Upper Saddle River, New Jersey: Pearson/Prentice Hall, 2009, page 625-647.

raddata_usa_territories_Fukushima_2011 *United States EPA Radiation Readings from 1 March 2011 to 22 April 2011*

Description

A table containing data after the radiation leaks from the nuclear power plants in Japan.

Usage

```
raddata_usa_territories_Fukushima_2011
```

Format

A data.table data frame with 3,223 rows and 41 variables:

State Abbreviation Nation State or US State/Commonwealth abbreviation

City Name Name of the city

Analyte Name Name of the analyte

Analyte ID Identification for the analyte

Result Amount Amount of the analyte

Result Unit Unit of measurement for the amount

Media Description Description of the medium

Collection Start Date Start date for the collection

Collection Ending Date End date for the collection

Result Date Date of the results

Surface Water Source Source of the surface water

Half Life Half-life of the analyte

Half Life Time Unit Unit of measurement for the half-life

Location Number-2 Location number

Project Number-2 Project number-2

Combined Standard Uncertainty Combined standard uncertainty

Minimum Detection Concentration Minimum detectable concentration

Analysis Number-2 Analysis number

Analyte Type Type of analyte

Ana Proc Name Analytical procedure name

Matrix ID Matrix identification

Project Number-3 Project number-3

Location Number Location number

Sample ID Sample identification

Sample Size Sample size

Sample Unit Unit of measurement for the sample

Analysis Number Analysis number

Analysis Size Analysis size

Analysis Unit Unit of measurement for the analysis

Analysis Size 2 Analysis size-2

Analysis Unit 2 Unit of measurement for the analysis-2

Analysis Proc Number Analysis procedure number

Proc Type ID Identification of the procedure type

Run Number Run number

Detection Number Detection number

Run Start Start of the run

Duration Duration of the run

Project Number Project number

Study Number Study number

Project ID Identification of the project

Study Name Name of the study

Source

United States (US) Environmental Protection Agency (EPA), "Radiation Data from EPA RadNet Radiation Alert Network 03/01/2011 - 04/22/2011: Based on Radiation Data from EPA RadNet Radiation Alert Network: Medium : Equal to , Air-Charcoal, Air-Filter, Drinking Water, Pasteurized Milk, Precipitation, Surface Water", https://web.archive.org/web/20110820090335/http://opendata.socrata.com:80/Government/Radiation-Data-from-EPA-RadNet-Radiation-Alert-Net/sdpb-7iqi. Retrieved thanks to the Internet Archive: Wayback Machine

---

raddata_US_Fukushima_2011

US EPA Envirofacts RadNet (Radiation in the US)

Description

A table containing data after the radiation leaks from the nuclear power plants in Japan.

Usage

```
raddata_US_Fukushima_2011
```

Format

A data.table data frame with 2,963 rows and 13 variables:

Analyte ID Identification for the analyte

Analyte Name Analyte name

Result Amount Amount of the analyte

Result Unit Unit of measurement for the amount

Collect End End date for the collection

Result Date Date of the results

Mat Desc Description of the material

Samp Size Sample size

Samp Unit Unit of measurement for the sample

Location 1 (City) Location 1 city name

Location 1 (State) Location 1 State/Commonwealth name

Location 1 (Latitude) Location 1 latitude

Location 1 (Longitude) Location 1 longitude

Source

United States (US) Environmental Protection Agency (EPA), "EPA Envirofacts RadNet Customized Search All RADIATION DATA in the USA: All data returning above zero from march 11 2011. Until the EPA halted public reporting. Doh!", https://web.archive.org/web/20111114010540/https://opendata.socrata.com/Education/Radiation-in-the-USA/rwxv-anw8. Retrieved thanks to the Internet Archive: Wayback Machine

---

rainfall_distribution_equation_coefficients

Table F-2 Coefficients for the equation used to generate figure 6-1

Description

A table containing the coefficients to generate Figure 6-1.

Usage

```
rainfall_distribution_equation_coefficients
```

Format

A data.table data frame with 4 rows and 5 variables:

Rainfall distribution Rainfall distribution type

C0 Coefficient value

C1 Coefficient value

C2 Coefficient value

C3 Coefficient value

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

---

rainfall_type_equation_coefficients

Table F-1 Coefficients for the equation used to generate exhibits 4-I through 4-III

Description

A table containing the coefficients to generate exhibits 4-1 to 4-III.

Usage

```
rainfall_type_equation_coefficients
```

Format

A data.table data frame with 28 rows and 5 variables:

Rainfall type Rainfall distribution type

Ia/P "Initial abstraction" over Rainfall ratio

C0 Coefficient value

C1 Coefficient value

C2 Coefficient value

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

riprap_table_ft *Tennessee Department of Transportation (TDOT) Machined riprap Table (feet)*

Description

A table containing the sizes of TDOT machined riprap in feet.

Usage

```
riprap_table_ft
```

Format

A data.table data frame with 5 rows and 4 variables:

Machined riprap Class TDOT class of machined riprap

Minimum Diameter Size [ft] Minimum diameter size of riprap

Average Diameter Size [ft] Average diameter size of riprap

Maximum Diameter Size [ft] Maximum diameter size of riprap

Source

1. Tennessee Department of Transportation (TDOT) 2015 Standard Specifications, https://www.tn.gov/content/tn/tdot/tdot-construction-division/transportation-construction-division-res transportation-construction-2015-standard-specifications.html.
2. Tennessee Department of Transportation (TDOT) Standard Specifications for Road and Bridge Construction, https://www.tn.gov/content/dam/tn/tdot/construction/old_web_page/TDOT_2015_Spec_Book_FINAL_pdf.pdf.
3. City of Knoxville BMP Manual Erosion & Sediment – ACTIVITY: Riprap ES–23, May 2003 https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_109478/File/Engineering/BMPManual/ES-23.pdf.

riprap_table_in *Tennessee Department of Transportation (TDOT) Machined riprap Table (inches)*

Description

A table containing the sizes of TDOT machined riprap in inches.

Usage

```
riprap_table_in
```

Format

A data.table data frame with 5 rows and 4 variables:

Machined riprap Class Description of the surface

Minimum Diameter Size [in] Minimum diameter size of riprap

Average Diameter Size [in] Minimum diameter size of riprap

Maximum Diameter Size [in] Minimum diameter size of riprap

Source

1. Tennessee Department of Transportation (TDOT) 2015 Standard Specifications, https://www.tn.gov/content/tn/tdot/tdot-construction-division/transportation-construction-division-res transportation-construction-2015-standard-specifications.html.
2. Tennessee Department of Transportation (TDOT) Standard Specifications for Road and Bridge Construction, https://www.tn.gov/content/dam/tn/tdot/construction/old_web_page/TDOT_2015_Spec_Book_FINAL_pdf.pdf.
3. City of Knoxville BMP Manual Erosion & Sediment – ACTIVITY: Riprap ES–23, May 2003 https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_109478/File/Engineering/BMPManual/ES-23.pdf.

---

riprap_table_mm *Tennessee Department of Transportation (TDOT) Machined riprap Table (millimeters)*

Description

A table containing the sizes of TDOT machined riprap in millimeters.

Usage

```
riprap_table_mm
```

Format

A data.table data frame with 5 rows and 4 variables:

Machined riprap Class Description of the surface

Minimum Diameter Size [mm] Minimum diameter size of riprap

Average Diameter Size [mm] Minimum diameter size of riprap

Maximum Diameter Size [mm] Minimum diameter size of riprap

Source

1. Tennessee Department of Transportation (TDOT) 2015 Standard Specifications, https://www.tn.gov/content/tn/tdot/tdot-construction-division/transportation-construction-division-reso transportation-construction-2015-standard-specifications.html.
2. Tennessee Department of Transportation (TDOT) Standard Specifications for Road and Bridge Construction, https://www.tn.gov/content/dam/tn/tdot/construction/old_web_page/TDOT_2015_Spec_Book_FINAL_pdf.pdf.
3. City of Knoxville BMP Manual Erosion & Sediment – ACTIVITY: Riprap ES–23, May 2003 https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_109478/File/Engineering/BMPManual/ES-23.pdf.

`riprap_table_yd` *Tennessee Department of Transportation (TDOT) Machined riprap Table (yards)*

Description

A table containing the sizes of TDOT machined riprap in yards.

Usage

```
riprap_table_yd
```

Format

A data.table data frame with 5 rows and 4 variables:

Machined riprap Class Description of the surface

Minimum Diameter Size [yd] Minimum diameter size of riprap

Average Diameter Size [yd] Minimum diameter size of riprap

Maximum Diameter Size [yd] Minimum diameter size of riprap

Source

1. Tennessee Department of Transportation (TDOT) 2015 Standard Specifications, https://www.tn.gov/content/tn/tdot/tdot-construction-division/transportation-construction-division-reso transportation-construction-2015-standard-specifications.html.
2. Tennessee Department of Transportation (TDOT) Standard Specifications for Road and Bridge Construction, https://www.tn.gov/content/dam/tn/tdot/construction/old_web_page/TDOT_2015_Spec_Book_FINAL_pdf.pdf.
3. City of Knoxville BMP Manual Erosion & Sediment – ACTIVITY: Riprap ES–23, May 2003 https://cdnsm5-hosted.civiclive.com/UserFiles/Servers/Server_109478/File/Engineering/BMPManual/ES-23.pdf.

runoff_depth *Table 2-1: Runoff depth for selected CN's and rainfall amounts*

Description

A table containing certain Curve Numbers and the rainfall amounts.

Usage

```
runoff_depth
```

Format

A data.table data frame with 22 rows and 14 variables:

Rainfall (in) Amount of rainfall in inches

Runoff depth (in) for curve number of 40 Runoff depth in inches for a curve number of 40

Runoff depth (in) for curve number of 45 Runoff depth in inches for a curve number of 45

Runoff depth (in) for curve number of 50 Runoff depth in inches for a curve number of 50

Runoff depth (in) for curve number of 55 Runoff depth in inches for a curve number of 55

Runoff depth (in) for curve number of 60 Runoff depth in inches for a curve number of 60

Runoff depth (in) for curve number of 65 Runoff depth in inches for a curve number of 65

Runoff depth (in) for curve number of 70 Runoff depth in inches for a curve number of 70

Runoff depth (in) for curve number of 75 Runoff depth in inches for a curve number of 75

Runoff depth (in) for curve number of 80 Runoff depth in inches for a curve number of 80

Runoff depth (in) for curve number of 85 Runoff depth in inches for a curve number of 85

Runoff depth (in) for curve number of 90 Runoff depth in inches for a curve number of 90

Runoff depth (in) for curve number of 95 Runoff depth in inches for a curve number of 95

Runoff depth (in) for curve number of 98 Runoff depth in inches for a curve number of 98

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

runoff_depth_notes — *Notes for Table 2-1: Runoff depth for selected CN's and rainfall amounts*

Description

A table containing the notes for the runoff depth table.

Usage

```
runoff_depth_notes
```

Format

A data.table data frame with 1 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

United States Department of Agriculture Natural Resources Conservation Service Conservation Engineering Division, "Urban Hydrology for Small Watersheds Technical Release 55 (TR-55)", June 1986, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=22162.wba

uh_ratios — *Table 16-2 Computation of coordinates for unit hydrograph for use in example 16-1*

Description

A table containing the coordinates for a unit hydrograph. Developed for use in Example 16-1.

Usage

```
uh_ratios
```

Format

A data.table data frame with 51 rows and 2 variables:

Time ratios (t/Tp) "ratio of the time of DUH coordinate to time to peak of the DUH"

Discharge ratios (q/qp) "ratio of discharge at a certain time to the peak discharge of the unit hydrograph (UH)"

Source

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), *National Engineering Handbook*, "Part 630 Hydrology Chapter 16 Hydrographs", Pages 16-4, 16-9, 16-15, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17755.wba

---

uh_ratios_masscurve *Table 16-1: Ratios for dimensionless unit hydrograph and mass curve*

Description

A table containing the time, discharge, and mass curve ratios.

Usage

```
uh_ratios_masscurve
```

Format

A data.table data frame with 33 rows and 3 variables:

Time ratios (t/Tp) "ratio of the time of DUH coordinate to time to peak of the DUH"

Discharge ratios (q/qp) "ratio of discharge at a certain time to the peak discharge of the unit hydrograph (UH)"

Mass curve ratios (Qa/Q) ratio of "accumulated volume at time" to the "total volume"

Source

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), *National Engineering Handbook*, "Part 630 Hydrology Chapter 16 Hydrographs", Pages 16-4, 16-9, 16-15, https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17755.wba

---

USAEC_facilities_nuclear_accidents *Criticality Accidents in USAEC Facilities, 1945-1970 (Trinity Atomic Web Site)*

Description

A table containing the critical accidents in United States Atomic Energy Commission (USAEC) facilities.

Usage

```
USAEC_facilities_nuclear_accidents
```

Format

A data.table data frame with 26 rows and 8 variables:

Date Date of the accident

Location Location of the accident

Active Material Active materials released

Geometry Geometric description

Total Fissions Total number of fissions

Cause Cause of the accident

Physical Damage Physical damage from the accident

$ Loss Monetary loss in US dollars

Source

Trinity Atomic Web Site: Criticality Accidents in USAEC Facilities, 1945-1970 (from "Operational Accidents and Radiation Exposure Experience Within the United States Atomic Energy Commission, 1943-1970," (WASH 1192), U. S. Government Printing Office, Washington, D.C., 1971.), *Bulletin of the American Meteorological Society*, Vol. 78, No. 2, February 1997, pages 197-208, https://www.abomb1.org/accident/crittabl.html.

USA_primary_water_contaminants

US EPA National Primary Drinking Water Regulations Contaminants

---

Description

A table containing the primary drinking water pollutants.

Usage

```
USA_primary_water_contaminants
```

Format

A data.table data frame with 87 rows and 5 variables:

Contaminant The name of the contaminant

MCLG1 (mg/L)2 Maximum Contaminant Level Goal (MCLG) in mg/L

MCL or TT1 (mg/L)2 Maximum Contaminant Level (MCL) in mg/L

Potential Health Effects from Long-Term Exposure Above the MCL (unless specified as short-term) Potential adverse health effects

Sources of Contaminant in Drinking Water What is the source of the contaminant

Source

United States (US) Environmental Protection Agency (EPA): "National Primary Drinking Water Regulations", https://web.archive.org/web/20230801024443/https://www.epa.gov/ground-water-and-drinking/national-primary-drinking-water-regulations. Used the Internet Archive: Wayback Machine archived version for acceptance into CRAN.

USA_primary_water_contaminants_notes

US EPA National Primary Drinking Water Regulations Contaminants Notes

---

Description

A table of notes for the primary drinking water pollutants table.

Usage

```
USA_primary_water_contaminants_notes
```

Format

A data.table data frame with 29 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

United States (US) Environmental Protection Agency (EPA): "National Primary Drinking Water Regulations", https://web.archive.org/web/20230801024443/https://www.epa.gov/ground-water-and-drinking/national-primary-drinking-water-regulations. Used the Internet Archive: Wayback Machine archived version for acceptance into CRAN.

USA_secondary_water_contaminants

US EPA Secondary Drinking Water Standards

Description

A table containing the secondary drinking water pollutants.

Usage

```
USA_secondary_water_contaminants
```

Format

A data.table data frame with 15 rows and 3 variables:

Contaminant The name of the contaminant

Secondary MCL Maximum Contaminant Level (MCL)

Noticeable Effects above the Secondary MCL What are the noticeable effects above the secondary MCL

Source

United States (US) Environmental Protection Agency (EPA): "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals", https://web.archive.org/web/20230903054648/https://www.epa.gov/sdwa/secondary-drinking-water-standards-guidance-nuisance-chemicals. Used the Internet Archive: Wayback Machine archived version for acceptance into CRAN.

`USA_secondary_water_contaminants_notes`

US EPA Secondary Drinking Water Standards Notes

Description

A table of notes for the secondary drinking water pollutants table.

Usage

```
USA_secondary_water_contaminants_notes
```

Format

A data.table data frame with 1 rows and 2 variables:

Note Number (*) The note numbers

Notes The notes

Source

United States (US) Environmental Protection Agency (EPA): "Secondary Drinking Water Standards: Guidance for Nuisance Chemicals", https://web.archive.org/web/20230903054648/https://www.epa.gov/sdwa/secondary-drinking-water-standards-guidance-nuisance-chemicals. Used the Internet Archive: Wayback Machine archived version for acceptance into CRAN.

`water_vapour_pressure` *Vapour Pressure of Water (Wikipedia)*

Description

A table containing the vapor pressure of water at different temperatures & pressures.

Usage

```
water_vapour_pressure
```

Format

A data.table data frame with 21 rows and 5 variables:

T, degrees C Temperature in degrees Celsius

T, degrees F Temperature in degrees Fahrenheit

P, kPa Pressure in kilo Pascals

P, torr Pressure in Torricelli

P, atm Pressure in atmospheres

Source

Wikimedia Foundation, Inc. Wikipedia, 6 September 2023, "Vapour pressure of water", https://en.wikipedia.org/wiki/Vapour_pressure_of_water.

Index