

SpectraSearch Database Documentation

This is a database of spectral information as part of the SpectraSearch project. This is an InnoDB SQL database with two tables (plus a USER_DATA table not documented here for organizational clarity).

ER Diagram

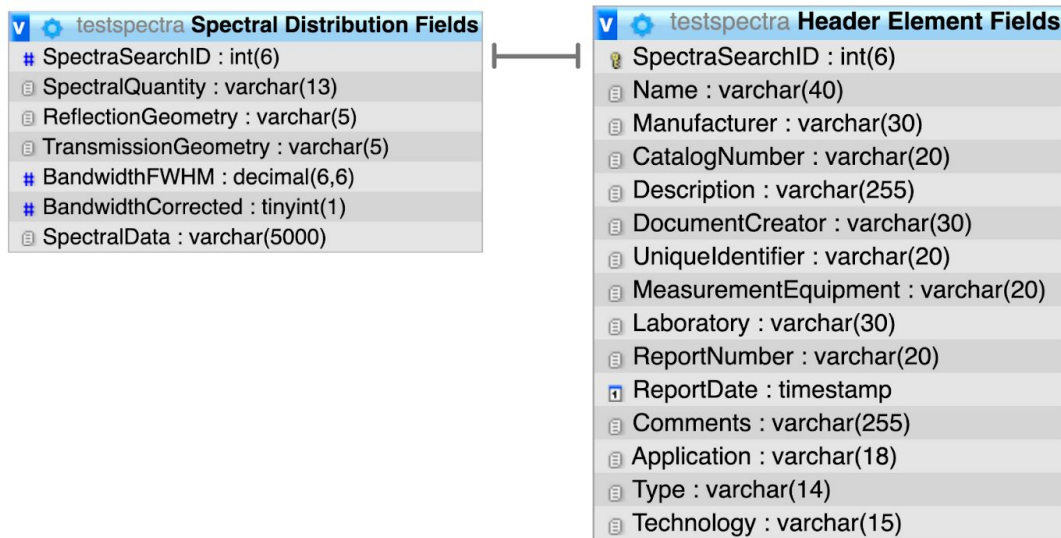


Table Column Information

**Where "See IES TM-30 Document," see the 'IES Method for Evaluating Light Source Color Rendition' (TM-30-15) technical memorandum for details*

***Where (NOT NULL) the column is not optional*

Spectral Distribution Fields

- SpectraSearchID: unique ID for database, used as foreign key between two tables (NOT NULL)
- SpectralQuantity: See IES TM-30 Document
- ReflectionGeometry: See IES TM-30 Document
- TransmissionGeometry: See IES TM-30 Document
- BandwithFWHM: See IES TM-30 Document
- BandwithCorrected: See IES TM-30 Document
- SpectralData: spectral power distribution values from 350-800 nanometers integer inclusive, formatted in a comma delimited array (NOT NULL)

Header Element Fields

- SpectraSearchID: unique ID for database, used as foreign key between two tables (NOT NULL)
- Name: name of lamp/luminaire/retrofit kit/filter (NOT NULL)
- Manufacturer: item manufacturer
- CatalogNumber: manufacturer catalog number
- Description: short text description of item
- DocumentCreator: See IES TM-30 Document
- UniqueIdentifier: See IES TM-30 Document
- MeasurementEquipment: See IES TM-30 Document
- Laboratory: See IES TM-30 Document
- ReportNumber: See IES TM-30 Document
- ReportDate: See IES TM-30 Document
- Comments: space for extra comments on item
- Application: Item application such as A-type, Decorative, Small Directional, Downlighting, Linear Fixture, Low/High Bay, Indoor Other, Parking (Lot), Parking (Garage), Building Exterior, Outdoor Other, Connected, Filter, and Other (NOT NULL)
- Type: Type of item such as Lamp, Luminaire, Retrofit Kit, Filter, and No Distinction (NOT NULL)
- Technology: Item technology such as Incandescent, LED, and N/A (NOT NULL)

Spectral Data

The SpectralData column holds the spectral power distribution values from 350-800 nanometers integer inclusive for a database entry formatted in a comma delimited array.

An example data value in the database:

0.002 ,0.002, 0.004, ...(444 more values)..., 0.010, 0.104, 0.098

Translates to:

350nm: 0.002

351nm: 0.002

352nm: 0.004

... (353-797nm values)

798nm: 0.010

799nm: 0.104

800nm: 0.098

We include spectral data for 350 nanometers to 800 nanometers integer inclusive (we do not support spectral distribution values in decimal format (i.e. 350.5nm, 700.6nm) or values below 350nm or above 800nm).

The SpectralData column allows for up to 5000 characters, which averages to a 9 point float precision for each data point at most.

The database requires 450 data points for spectral distribution (350-800nm) comma delimited. This averages to 11 characters allowed per datapoint, not including decimal points and commas. So, with decimal points (not required) and commas (required), the average character allotment per datapoint is 9 characters which may translate to 9 point float precision without a leading zero, or 8 point float precision with a leading zero (which is not required).

Float Precision Example

Permissible Individual Datapoint Examples:

0.00001234 (10 characters, 8 point float precision)
.000012345 (10 characters, 9 point float precision)
.000012345 (10 characters, 9 point float precision)
9999.99999 (10 characters, 5 point float precision)
1000000000 (10 characters, 0 point float precision)

Note that each individual data point is not required to be at or under ten characters; as long as the total character count of the array is under 5000, there are 450 items corresponding to 350-800nm integer inclusive, and these items are comma delimited, the data will pass. For example, if several items have values of 0 (1 character), other items may be longer than ten characters (as long as the total character count of the array is under 5000).

The SpectraSearch Project is a joint project between American University computer science students and the US Department of Energy's Advanced Lighting Program. For questions about the SpectraSearch database, contact the interim DBA at LD9300A@student.american.edu.