

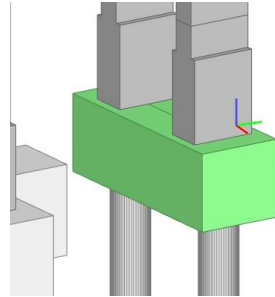
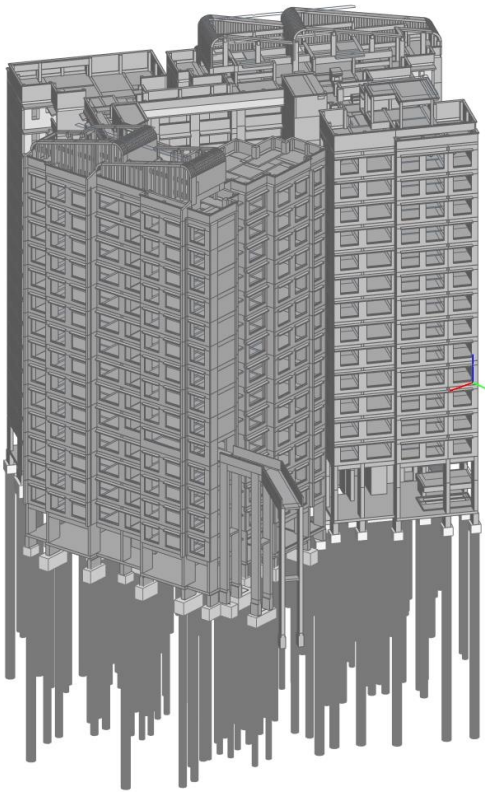


IFC-SG Validator

Developed by BIMLife

Overview

IFC-SG validator extract all elements from the model and check for presence of IFC-SG parameter



Name	Value	Unit
Element Specific		
Guid	0C91C47A7474b6C23Fp	
IFCInsty	IFCFooting	
Name	PC22_2DB:2A3:1713797	
ObjectType	IFCFootingType	
ProfiledType	PILE_CAP	
Tag	1713797	
Profile		
ProfileName	2A3	
IFC-SG Structural PILE CAP		
BottomMain	8x25	mm
Depth	1.200	
IFCExportId	IFCFootingType_PILE_CAP	
IFCObjectType	IFCFootingType	
Length	3.456	mm
Mark	2A3a	
Material	Concrete	
ReinforcementSteelGrade	S50	
SkidBar	10x20	
SkidBarType	C	
Stirrup	H20-100 + 3x20-100	
StirrupType	NORMAL + HOOKS	
StrengthClass	C32/40	
TopMain	8x25	
Width	1.300	mm
Pset_EnvironmentalImpactIndicators		
Reference	2A3	
Pset_FootingCommon		
Reference	2A3	
Pset_ReinforcementBarCountOfIndependentFooting		
Reference	2A3	
Pset_ReinforcementBarCountOfContinuousFooting		
Reference	2A3	
SGPset_ConcreteElementGeneral		
StrengthClass	C32/40	
SGPset_Footing		
ReinforcementSteelGrade	S50	
SGPset_FootingDimension		
Depth	1.200	mm
Width	1.300	mm
SGPset_FootingReinforcement		
BottomMain	8x25	
SkidBar	10x20	
Stirrup	H20-100 + 3x20-100	
StirrupType	NORMAL + HOOKS	
TopMain	8x25	
SGPset_Material		
Material	Concrete	

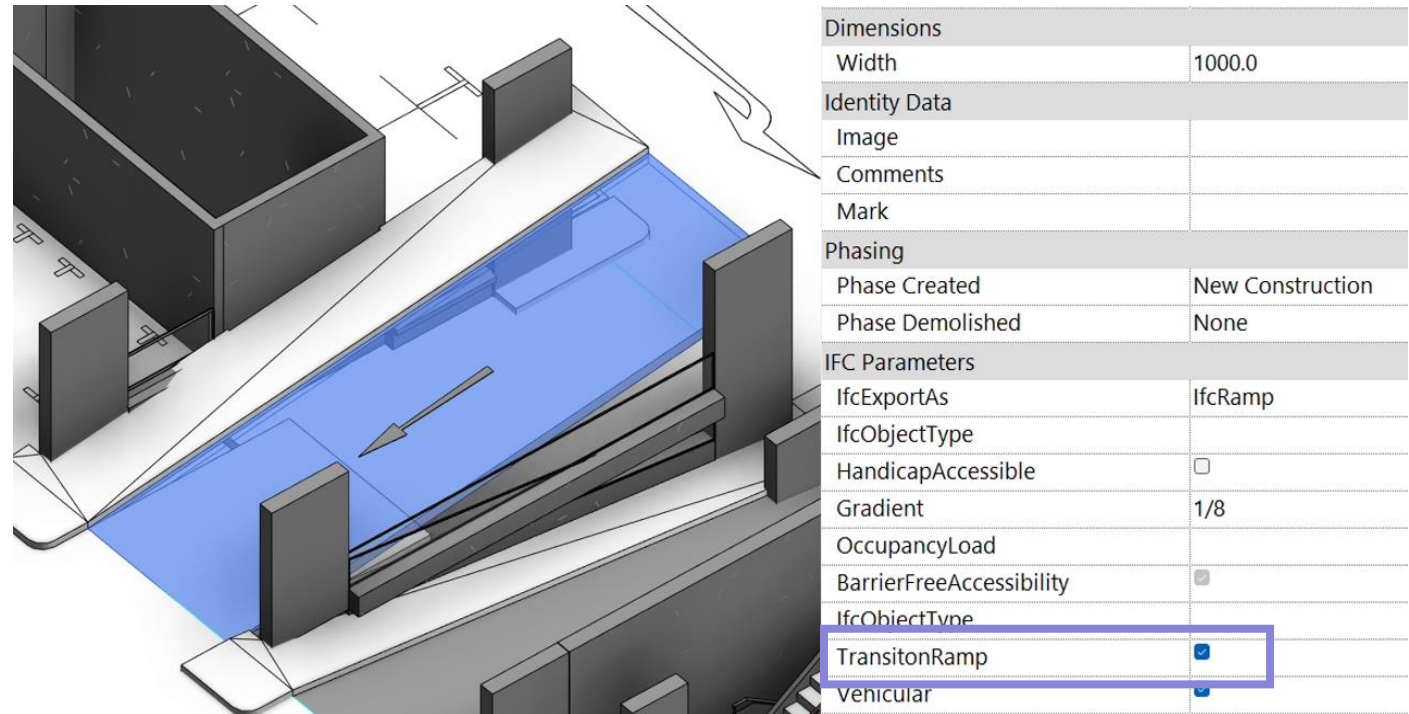
Line	IFC4 Entities	IFC Sub Types (= USERDEFINED)	Property Set	Property Name (Yellow = automatically extracted from native)	Pr
97	IfcFooting	Need not specify	SGPset_FootingDimension	Breadth	Ler
98	IfcFooting	Need not specify	SGPset_FootingDimension	Breadth	Ler
99	IfcFooting	Need not specify	SGPset_Footing	DA1-1_BearingCapacity	Int
100	IfcFooting	Need not specify	SGPset_Footing	DA1-2_BearingCapacity	Int
101	IfcFooting	Need not specify	SGPset_FootingDimension	Depth	Ler
102	IfcFooting	Need not specify	SGPset_FootingDimension	Mark	Lat
103	IfcFooting	Need not specify	SGPset_Material	MaterialGrade	Lat
104	IfcFooting	Need not specify	SGPset_Footing	ReferTo2Ddetail	Lat
105	IfcFooting	Need not specify	SGPset_Footing	ReinforcementSteelGrade	Lat
106	IfcFooting	Need not specify	SGPset_FootingReinforcement	SideBar	Lat
107	IfcFooting	Need not specify	SGPset_Footing	SoilVerificationTest	Lat
108	IfcFooting	Need not specify	SGPset_FootingReinforcement	Stirrups	Lat
109	IfcFooting	Need not specify	SGPset_FootingReinforcement	StirrupsType	Lat
110	IfcFooting	Need not specify	SGPset_FoundationStructuralLoad	WorkingLoad	Int
122	IfcFooting	PAD_FOOTING	SGPset_FootingReinforcement	TopDistribution	Lat
144	IfcFooting	PILE_CAP	SGPset_FootingReinforcement	BottomDistribution	Lat
145	IfcFooting	PILE_CAP	SGPset_FootingReinforcement	BottomMain	Lat
146	IfcFooting	PILE_CAP	SGPset_Footing	ReinforcementSteelGrade	Lat
147	IfcFooting	PILE_CAP	SGPset_FootingReinforcement	TopMain	Lat
201	IfcFooting	STRIP_FOOTING	SGPset_FootingDimension	Width	Ler

Compare

Common pitfall when embedding IFC

Property name can be spelt wrongly.

Manually creating a parameter increases the likelihood of spelling errors.



Common pitfall when embedding IFC

May miss out some elements.

Spelling errors are particularly common when setting a property as an Instance parameter in Revit. When creating a new element, the parameter will be empty by default.

While creating the parameter as a type parameter is safer, each type still needs to have the parameter set.

<Wall Schedule>

A	B	C	D
Family	Type	Base Constraint	FireRating
Basic Wall	EXT_PCW100_SK_HDB2_K1F	LEVEL 1	1
Basic Wall	EXT_PCW100_SK_HDB2_K1F	LEVEL 1	1
Basic Wall	EXT_PCW100_SK_HDB2_K1F	LEVEL 1	1
Basic Wall	EXT_PCW100_SK_HDB2_K1F	LEVEL 1	1
Basic Wall	EXT_RCW250_HDB_1HR	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW	LEVEL 1	1
Basic Wall	INT_PCW120_SK_HDB5_FW_1HR	LEVEL 1	
Basic Wall	INT_PCW120_SK_HDB5_FW_1HR	LEVEL 1	
Basic Wall	INT_PCW200_SK_HDB_1HR	LEVEL 1	
Basic Wall	INT_PCW200_SK_HDB_1HR	LEVEL 1	
Basic Wall	EXT_PCW100_SK_HDB2_K1F	LEVEL 1	1
Basic Wall	EXT_PCW100_SK_HDB2_K1F	LEVEL 1	1
Basic Wall	EXT_PCW100_SK_HDB2_K1F	LEVEL 1	1
Basic Wall	EXT_PCW100_SK_HDB2_K1F	LEVEL 1	1

Common pitfall when embedding IFC

Wrong property set

Property need to be assign to the right property set.

FireRating should be part of Pset_WallCommon instead of SGPset_Wall according to IFC-SG Mapping*.

[-] Pset_WallCommon	
IsExternal	No
LoadBearing	No
Status	EXISTING
+ Qto_WallBaseQuantities	
[-] SGPset_ConcreteElementGeneral	
ReinforcementStrengthClass	
[-] SGPset_Material	
Material	
[-] SGPset_Wall	
Accreditation_PAS	No
ConstructionMethod	
CorrectionFactor	0
ExternalReference	
FinishType	
FireStop	No
FireRating	1 hr
FlameSpreadClass	
IsPartyWall	No
Material_DiffuseReflectance	
Material_SpecularReflectance	
MechanicalConnectionType	
PorousFence	No
PrecisionBlockwall	No
ReferTo2DDetail	No
ReferToDrawingNumber	
ReinforcementSteelGrade	
RightOfWay	No
ShelterUsage	No
StrengthClass	
WaterSealant	No
Watertight	No

*IFC-SG Mapping File can be downloaded at <https://go.gov.sg/ifcsg>

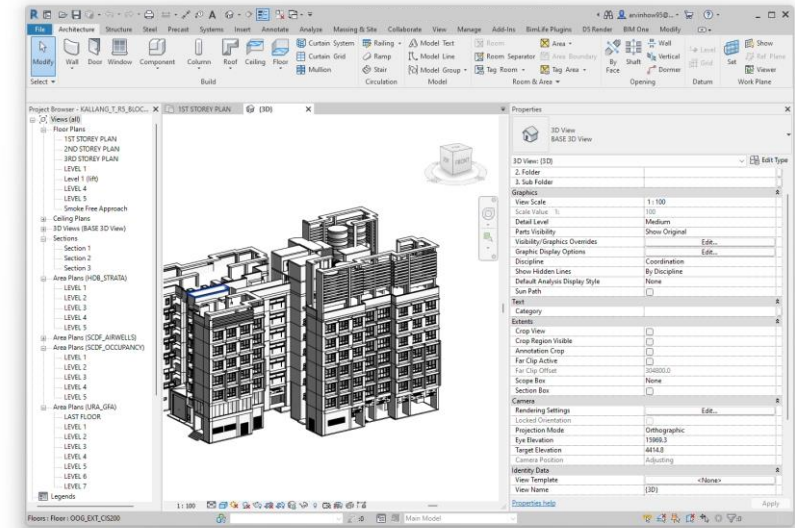
Prerequisite

- IFC Model
- IFC-SG Mapping File (Optional)



Preparing the Model

- Input parameters into model.
- Instruction can be found on IFC-SG resource kit.



Documents > Sharing with External > IFC-SG Resource Kit (Industry)

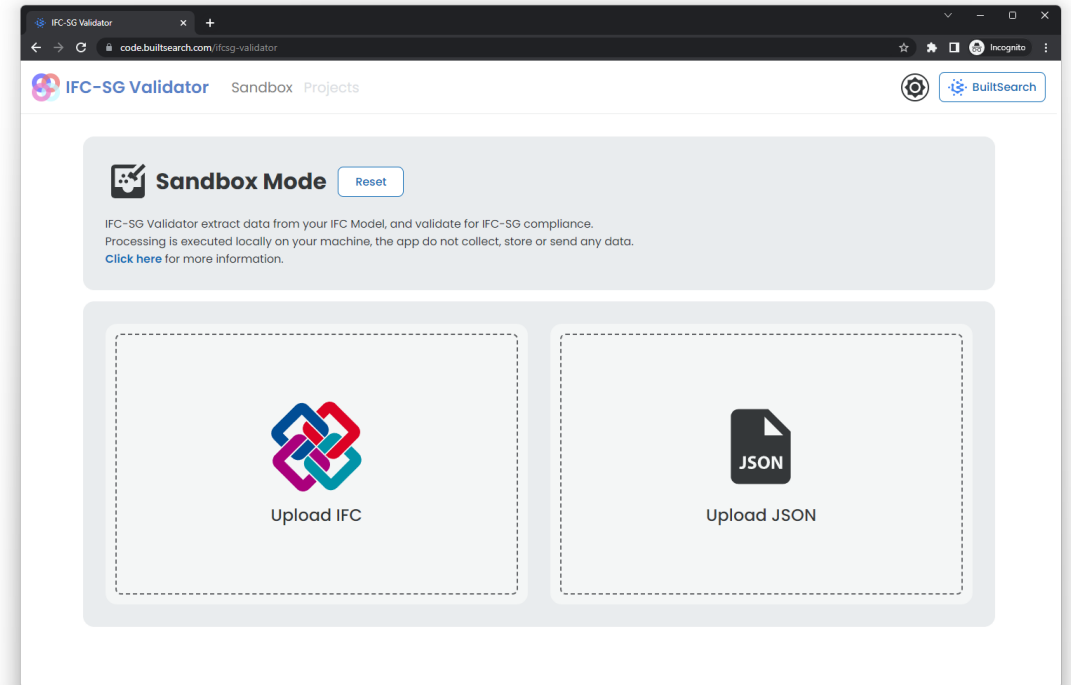
Name	Modified
Step 3) Archicad	August 17, 2022
Step 3) OpenBuildings Designer	September 29, 2022
Step 3) Revit	August 17, 2022
Step 3) Tekla	October 17, 2022
Step 4) Exercise on IFC Key Data Structure	October 25, 2022
Supplementary Doc	August 12, 2022
Important Disclaimer regarding IFC Resource Kit.txt	August 12, 2022
Step 0) How to learn IFC-SG.pdf	December 28, 2022
Step 1) IFC-SG 101 (Sandbox).pdf	December 28, 2022
Step 2) Industry Mapping 17 Apr 2023.xlsx	About an hour ago
Step 2) URA excel (IfcSpace).xlsx	24 hours ago

Validation Overview

1. Go to <https://www.code.builtsearch.com/ifcsg-validator>
2. Upload IFC Model
3. Upload IFC-SG Mapping file (Optional)
4. View Result

Step 1

Click on Upload IFC and select a IFC Model

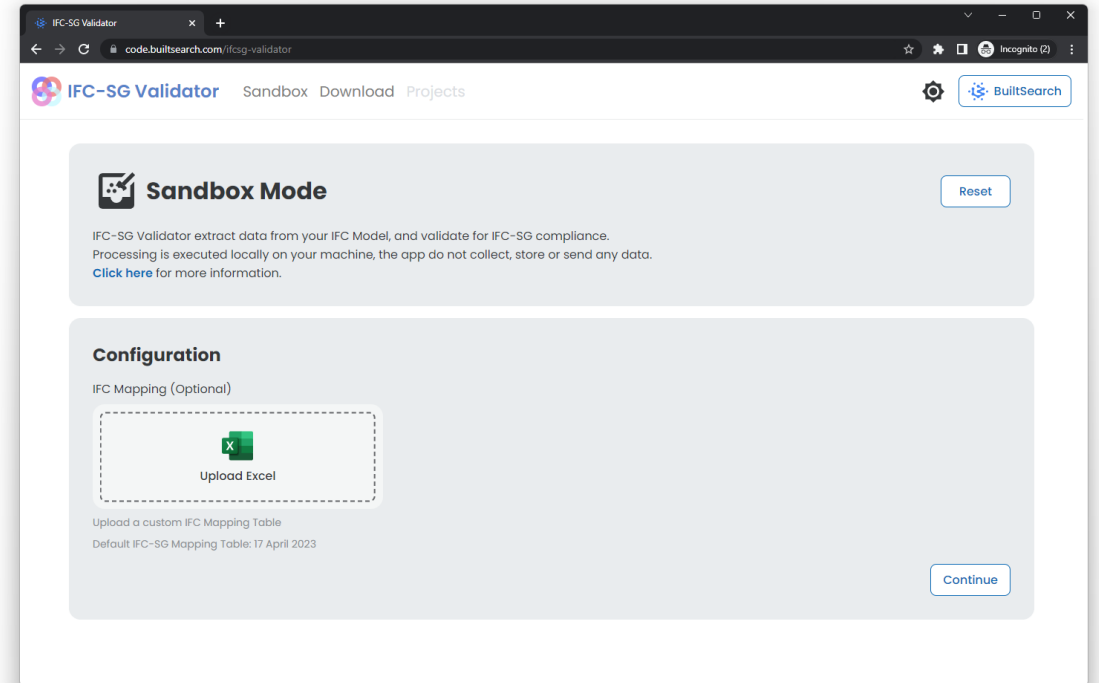


Note:
Require JavaScript to run.
All version of Internet Explorer is not supported.

Step 2

By default IFC-SG Validator uses latest IFC-SG Mapping file from IFC-SG resource kit.

To use a different Mapping table, upload your version of IFC-SG Mapping file.



Step 3

View results

The score should not be taken at face value, as the score is calculated by the presence of each element for each entity property in your IFC Model as compared to IFC-SG properties listed in the mapping file.

Depending on your project's nature, it may not be relevant to have certain missing elements, therefore the score should only be used as an estimation.

The screenshot shows the IFC-SG Validator web application interface. The browser address bar indicates the URL is code.builtsearch.com/ifcsg-validator. The page title is "IFC-SG Validator" and the navigation menu includes "Sandbox" and "Projects".

The main content area is titled "Sandbox Mode" and includes a "Reset" button. Below this, there is a section for the file "TP N8C32A-SE1411_S1_875B_20221011.ifc" with a "Download" button. The summary shows "Total 10020" and "Validated 10020". There are buttons for "Display result as" (Fraction, Percentage) and "Filter by Entity" (IfcBuildi...). A "Show Score" link is also present.

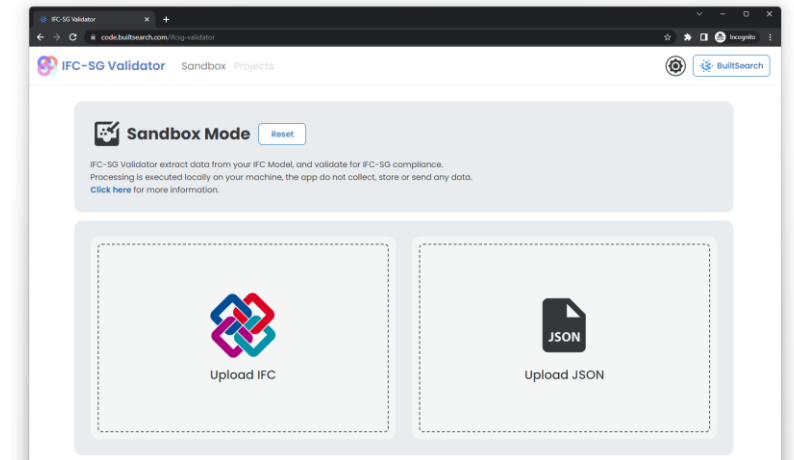
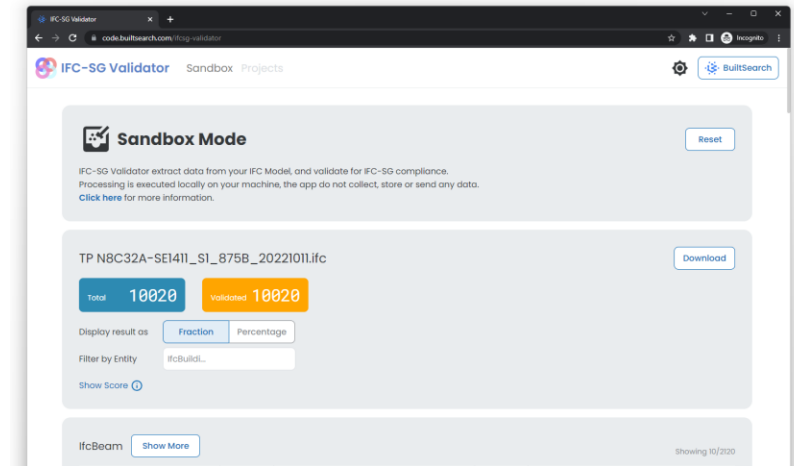
The results section is titled "IfcBeam" and includes a "Show More" button. The table shows the following data:

Guid	ElementId	ObjectType	Result				
				BeamCage	BottomLeft	BottomMiddle	Bott
2UB\$aZoDX3JeyhOCUMoafI	1099608	_pte_Beam_Rectangular;(250x800);1099608	4 / 28	-	-	-	
3Kq25fMYDAuBzHzTChiuUV	1646268	_pte_Beam_Rectangular;(350x450);1646268	12 / 28	-	3H20	3H20	

Download as JSON

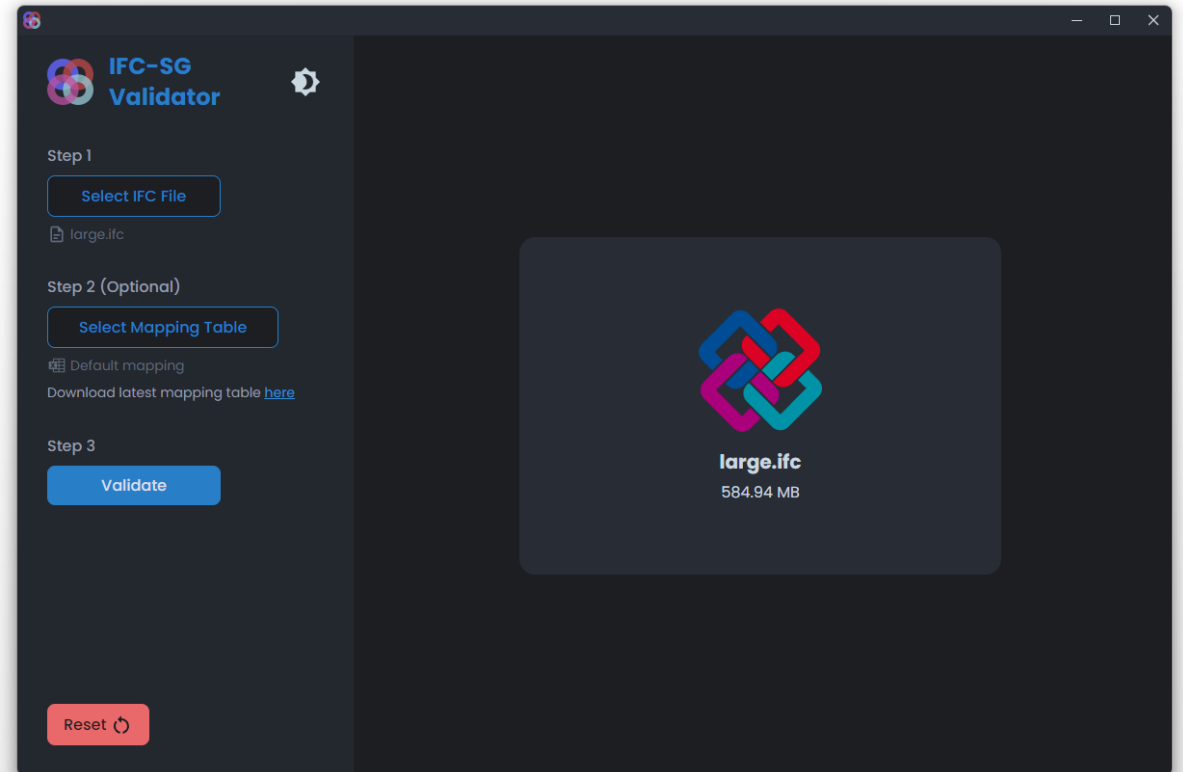
By clicking on the download button, you will download a JSON file of this model IFC-SG Validator result, which can be uploaded on the home page.

This will load the result immediately without processing the model.



Desktop Application

- Highly optimized extractor compared to web browser version
- Capable of handling very large IFC file¹
- Search specific element by filtering Entity, GUID, ElementID/Tag or ObjectType.
- Offline mode, does not require access to internet
- Portable version, no installation required



Note:
Desktop application can be downloaded at <https://code.builtsearch.com/ifcsg-validator/download>

¹ Processed within 10s for 584mb file on i7-13700k

Notice and Information

Notice

- By using IFC-SG Validator, you agree to our terms of use and privacy notice as stated below:
- We understand that data security is critical; therefore, this application does NOT store, transfer, or collect your IFC model or IFC data to any database or server.
- The process of extracting data from your IFC model is executed locally on your system.
- We cannot warrant that this application is error-free, and we are not liable for any damages.
- IFC-SG Validator uses [IFC Extractor](#) under the hood. IFC Extractor is an open-source project developed by us.
- IFC-SG Validator is free for personal and commercial use; however, we do not allow copying or replicating of this application, except for IFC Extractor as mentioned above.

How to use

IFC-SG Validator is rather self-explanatory; below are the basic instructions to use.

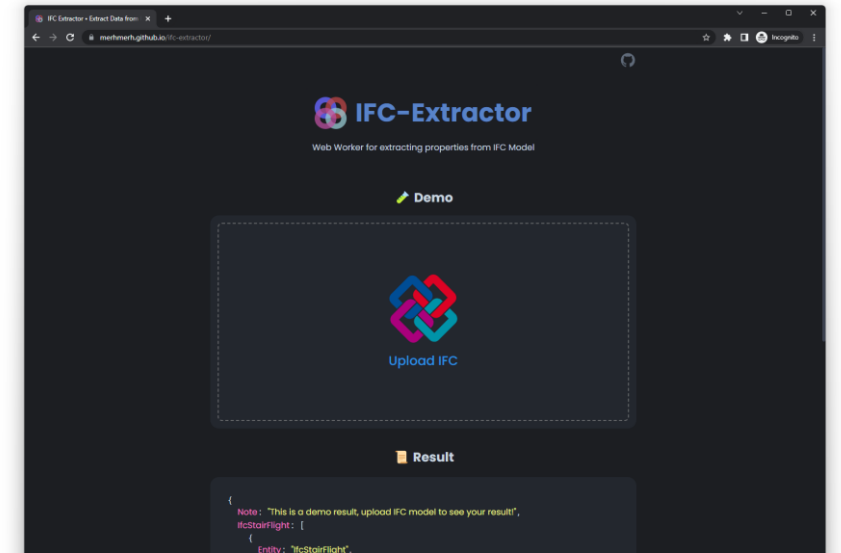
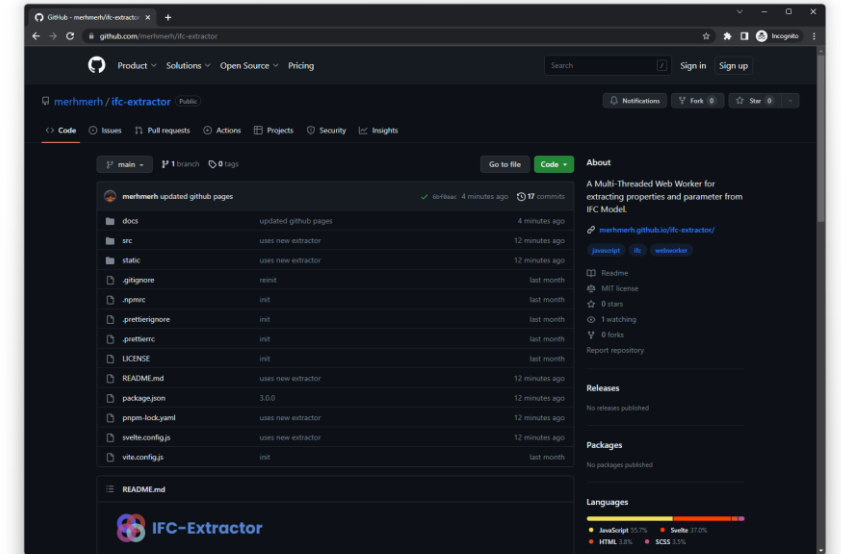
1. Click on upload IFC and select your IFC file.
2. On the next page, you may leave the configuration as default and continue.
3. To use a customized IFC-SG mapping table, you may upload your Excel file on the configuration page by clicking on the 'Upload Excel' button.
4. By default, IFC-SG Validator uses the latest [IFC-SG Mapping Table](#).
5. Depending on your system and file size, processing time varies.
6. On the Result Page, your elements are categorized by IFC Entity.
7. The score should not be taken at face value, as the score is calculated by the presence of each element for each entity property in your IFC Model as compared to IFC-SG properties listed in the mapping file. Depending on your project's nature, it may not be relevant to have certain missing elements, therefore the score should only be used as an estimation.
8. You may click the element GUID to display all the properties within said element.
9. You may download the result by clicking on the download button. This generates a .json file.
10. The .json file can be uploaded from the home page to display the result immediately without processing again.

IFC-Extractor

IFC-SG Validator uses IFC-Extractor under its hood.

IFC-Extractor is open source on GitHub.

<https://github.com/merhmerh/ifc-extractor>



Resources

IFC-SG Resource Kit: <https://go.gov.sg/ifcsg>

IFC-SG Validator: <https://code.builtsearch.com/ifcsg-validator>

IFC-SG Validator Desktop Application: <https://www.code.builtsearch.com/ifcsg-validator/download>

IFC-Extractor Demo Page: <https://merhmerh.github.io/ifc-extractor/>

IFC-Extractor GitHub Repo: <https://github.com/merhmerh/ifc-extractor>

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[@merhmerh](https://github.com/merhmerh)