R-PLUS

Manual Database

Developed by:

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Index

Introduction

The entry of the information into the System R+®is by means of Microsoft Access® files known as Portfolios. There are different types of portfolios:

Independent Portfolios
Collective Portfolios
Clusters Portfolios
Non Evaluable Risks Portfolios
Microinsurance Portfolios

Depending on the type of portfolio, you will need to include one o more tables in the database file, and for each of these tables, you will have to define its columns by using specific names and data types.

Note: the order of the columns does not matter because The System R+® reads the portfolio by looking for the column names.

Regarding Independent and Collective Policies, the System R+® can evaluate portfolios for different perils (Earthquake and Hydrometeorological Phenomena).

1. Data definition for Independent Portfolios

Independent Portfolios just need to include one table named TB_Incisos. "*Inciso*" is a spanish word meaning "*Location*" and therefore it has all the locations to be assessed. It is used in both Independent and Collective Policies.

The TB_Incisos table

The information included in the TB_Incisos table is classified in five groups of data:

1) Reference
2) Financial
3) Location
4) Structural
5) Special

TB_Incisos table for Earthquake and Hydrometeorological Phenomena

Group	No.	Field	Data Type	Values	Required	Peril
Reference	1	NUM_REGISTRO	Integer	1 a 3,000,000	Compulsory	All
	2	NUM_POLIZA	Alphanumeric		Compulsory	All
	3	RAMO	Alphanumeric	SISMO / HIDRO	Compulsory	All
Financial	4	FECHA_INICIO	Date	01/01/1900 - 12/31/2080	Compulsory	All
	5	FECHA_FIN	Date	01/01/1900 - 12/31/2080	Compulsory	All
	6	INM_VALOR_ASEGURABLE	Currency	0 - billions	Compulsory	All
	7	CONT_VALOR_ASEGURABLE	Currency	0 - billions	Compulsory	All
	8	CONSEC_VALOR_ASEGURABLE	Currency	0 - billions	Compulsory	All
	9	CONVENIO_VALOR_ASEGURABLE	Currency	0 - billions	Compulsory	All
	10	*PORCENTAJE_RETENCION	Percentage	0 to 100	Compulsory	All
	11	TIPO_PRIMER_RIESGO	Enumerated	(see definition)	Compulsory	All
	12	COMB_LIMITE_MAXIMO	Currency	0 - billions	Compulsory	All
	13	INM_LIMITE_MAXIMO	Currency	0 - billions	Compulsory	All
	14	CONT_LIMITE_MAXIMO	Currency	0 - billions	Compulsory	All
	15	CONSEC_LIMITE_MAXIMO	Currency	0 - billions	Compulsory	All
	16	CONVENIO_LIMITE_MAXIMO	Currency	0 - billions	Compulsory	All
	17	COMB_DEDUCIBLE	Percentage	0 to 100	Compulsory	All

Group	No.	Field	Data Type	Values	Required	Peril
	18	INM_DEDUCIBLE	Percentage	0 to 100	Compulsory	All
	19	CONT_DEDUCIBLE	Percentage	0 to 100	Compulsory	All
	20	CONSEC_DEDUCIBLE	Percentage	0 to 100	Compulsory	All
	21	CONVENIO_DEDUCIBLE	Percentage	0 to 100	Compulsory	All
	22	COMB_COASEGURO	Percentage	0 to 100	Compulsory	All
	23	INM_COASEGURO	Percentage	0 to 100	Compulsory	All
	24	CONT_COASEGURO	Percentage	0 to 100	Compulsory	All
	25	CONSEC_COASEGURO	Percentage	0 to 100	Compulsory	All
	26	CONVENIO_COASEGURO	Percentage	0 to 100	Compulsory	All
Location	27	CLAVE_PAIS	Integer	See the Countries Codes Catalog	Compulsory	All
	28	**CODIGO_LOCALIZACION	Integer	See the Location Codes Catalog	Compulsory	All
	29	LONGITUD	Decimal		Optional	All
	30	LATITUD	Decimal		Optional	All
	31	PRIMERA_LINEA_MAR	Integer	0 or 1	Optional	Hydro
	32	PRIMERA_LINEA_LAGO	Integer	0 or 1	Optional	Hydro
Structural	33	*** TIPO_CONSTRUCCION	Alphanumeric	See the Construction Classes Catalog	Compulsory	All
	34	****USO_INMUEBLE	Integer	1 - 34	Compulsory	Earthquake
	35	IRRE_PLANTA	Integer	1- 3	Optional	All
	36	NUM_PISOS	Integer	1 to 55	Compulsory	All
	37	AÑO_CONSTRUCCION	Integer	From 1325 to 2040	Optional	Earthquake
	38	COLUMNAS_CORTAS	Integer	0 or 1	Optional	Earthquake
	39	SOBREPESO	Integer	0 or 1	Optional	Earthquake
	40	GOLPETEO	Integer	1 - 4	Optional	Earthquake
	41	ESQUINA	Integer	0 or 1	Optional	Earthquake
	42	IRRE_ELEVACION	Integer	1 -3	Optional	Earthquake
	43	HUNDIMIENTOS	Integer	0 or 1	Optional	Earthquake
	44	DAÑOS_PREVIOS	Integer	0 or 1	Optional	Earthquake
	45	FUE_REPARADO	Integer	0 or 1	Optional	Earthquake
	46	FUE_REFORZADO	Integer	0 or 1	Optional	Earthquake
	47	AÑO_REFUERZO	Integer	1325 to 2040	Optional	Earthquake
	48	PISO	Integer	1 - 55	Optional	Hydro
	49	SOBREELEVACION_DESPLANTE	Double	-10 to 10	Optional	Hydro

Group	No.	Field	Data Type	Values	Required	Peril
	50	TIPO_CUBIERTA	Integer	1 - 4	Optional	Hydro
	51	FORMA_CUBIERTA	Integer	1 - 55	Optional	Hydro
	52	OBJETOS_CERCA	Integer	0 or 1	Optional	Hydro
	53	AZOTEA	Integer	0 or 1	Optional	Hydro
	54	TAMAÑO_CRISTAL	Integer	1 - 3	Optional	Hydro
	55	TIPO_VENTANAS	Integer	1 - 3	Optional	Hydro
	56	TIPO_DOMOS	Integer	1 - 4	Optional	Hydro
	57	SOPORTE_VENTANA	Integer	1 - 3	Optional	Hydro
	58	PORCENTAJE_CRISTAL_FACHADAS	Integer	1- 3	Optional	Hydro
	59	PORCENTAJE_DOMOS	Integer	1 - 4	Optional	Hydro
	60	FACHADA	Integer	1 - 4	Optional	Hydro
	61	MUROS_CONTENCION	Integer	1 - 4	Optional	Hydro
Special	62	OCUPANTES	Integer		Compulsory	Earthquake
	63	RESERVA	Integer	0 or 1	Compulsory	All
	64	*CP	Percentage	0 - 100	Compulsory	All
	65	*1X	Percentage	0 - 100	Compulsory	All
	66	*2X	Percentage	0 - 100	Compulsory	All
	67	*FAC	Percentage	0 - 100	Compulsory	All
	68	DANO_CONSECUENCIAL	Integer		Compulsory	All

Notes:
* When the evaluation is carried out for different retention percentages, the sum of them must be 100%
** The CODIGO_LOCALIZACION field is compulsory when coordinates are not provided, otherwise it is optional
*** For the regulatory version of the System R+® in Mexico and only for Earthquake, this field must be named CLASE_SISMO
**** When the peril is Hydrometeorological Phenomena, the USO_INMUBLE field is not required

Important:

When an evaluation is carried out for all perils, all the fields are necessary. When an evaluation is performed for a specific peril, the database should only include the necessary fields for that peril (those who have "All" under the Peril column in the table above)

1.1 Reference Data

This group includes all the necessary fields which enable you to identify the asset insured.

Number of record (NUM_REGISTRO)
Required: **compulsory**
Format: Integer
Peril: Earthquake and Hydrometeorological Phenomena

It is a unique number for both independent and collective polices. It is used for sorting purposes since it enables the System R+® to keep track of all the locations in the TB_Incisos table. This is essential so that you can identify to which locations the errors and warnings, detected by the System R+®, are related.

Independent policies: the number of record will be both unique and consecutive for each row in the database, hence there will not be two locations repeated or missing record numbers. It is strongly recommended that the record number starts at number 1. In this type of policy, the record number must be defined as a primary key in the Microsoft Access® database.

Collective policies: Like independent policies, the record number will be both unique and consecutive.

When you load both types of policies, the record number in the collective portfolio will follow up on the last record number in the Independent Portfolio.

Policy Number (NUM_POLIZA)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake and Hydrometeorological Phenomena

It refers to the code used to identify each record or policy. This data is alphanumeric. For assets found in collective policies, all locations under this number must have the same policy number given that this field identifies to which collective policy each location belongs. Thus, this field should not be repeated in any other collective policies. For assets found in independent policies, this field is used for referential purposes.

Type of Peril (RAMO)
Required*: **compulsory**
Format: alphanumeric
Peril: Earthquake and Hydrometeorological Phenomena

You must specify the type of peril which the System R+® will take into account during the evaluation process.

For seismic hazard, you must enter the key **SISMO** in the field RAMO. As for hydrometeorological phenomena, the key **HIDRO** must be entered in the field RAMO.

1.2 Financial Data

In this group, the technical data which is commonly set in the policy or obtained in the process of underwriting and reinsurance is described.

Inception Date (FECHA_INICIO)
Expiration Date (FECHA_FIN)

Required*: **compulsory**
Format: date (it is country dependant)
Peril: Earthquake and Hydrometeorological Phenomena

These fields refer to the validity period of the policy which covers the asset. For convenience, the System R+® considers the day of the inception date as a 24-hour day and the last day of validity will be of zero hours. If the cut-off date matches the inception date of a policy, the System R+® considers that policy as enforceable. if the cut-off date matches the expiration date, the System R+® will consider that policy as no longer effective.

Assets in collective policies: The fields inception date and expiration date can be left empty in the TB_Incisos table because the System R+® will not take them into account. These two fields must be indicated in the TB_DatosGenerales table in their corresponding columns.

Insurable value of the asset (INM_VALOR_ASEGURABLE)
Insurable value of contents (CONT_VALOR_ASEGURABLE)
**Insurable value of consequential losses
(CONSEC_VALOR_ASEGURABLE)**
**Insurable value for assets under express agreement
(CONVENIO_VALOR_ASEGURABLE)**

Required*:* **compulsory**
Format: number [currency]
Peril: Earthquake and Hydrometeorological Phenomena

These fields refer to the replacement costs of the asset, its contents, consequential losses (time element) and other structures or assets covered under express agreement depending on how the policy was bought. As for policies which are not of "First Risk Type", these values must be equal to the sum insured established in the policy.

In the case of mortgage policies, the insured value must correspond to the actual replacement value of the asset according to how the policies were bought and not to the unpaid balance of the credit.

In the case of consequential losses, the insurable value must be the amount of the annual exposure value which is the estimated value of losses produced during one year.

**Retention percentage of the insurable value
(PORCENTAJE_RETENCION)**
Required*:* **compulsory**
Format: 0 a 100 [per cent]
Peril: Earthquake and Hydrometeorological Phenomena

It is the percentage which represents the liability of the insurance company once the part of the obligations ceded in proportional reinsurance contracts has been discounted with respect to the total obligation signed in an insurance contract.

Assets in collective polices: Given that the retention percentage is the same for all the assets which make up the policy, the field PORCENTAJE_RETENCION inside the TB_Incisos table can be left empty for each of the assets insured because the System R+® will not take it into account. The retention percentage to be applied to the assets must be indicated in the TB_Capas table under the **Retencion** column.

First Risk Type (TIPO_PRIMER_RIESGO)
Required*: **compulsory**
Format: 4-digit number [enumerated]
Peril: Earthquake and Hydrometeorological Phenomena

It is the maximum limit of liability when it is combined for several coverages (building, contents, consequential losses, assets under express agreement) The table below displays all the possible combinations for this field where four digits represent schematically the limit condition for each coverage. The number "1" in each of the four positions indicates a combined limit for that coverage while the number "0" denotes that there is no combined limit for that coverage, hence this limit is considered as being independent. For more information refer to the Combined Maximum Limit field.

POSSIBLE VALUES FOR THE FIRST RISK TYPE FIELD

First Risk Type Value	Coverage Type				Limit Applied
	Building	Contents	Consequential	Express Agreement	
0000	0	0	0	0	Independent limits for each coverage
0001	0	0	0	1	Limit in assets under express agreement
0010	0	0	1	0	Consequential losses limit
0011	0	0	1	1	Combined limit in consequential losses and assets under express agreement
0100	0	1	0	0	Contents limit
0101	0	1	0	1	Combined limit in contents and assets under express agreement
0110	0	1	1	0	Combined limit in contents and consequential losses
0111	0	1	1	1	Combined limit in contents, consequential losses and assets under express agreement
1000	1	0	0	0	Building limit
1001	1	0	0	1	Combined limit in building and assets under express agreement
1010	1	0	1	0	Combined limit in building and consequential losses
1011	1	0	1	1	Combined limit in building, consequential losses and assets under express agreement
1100	1	1	0	0	Combined limit in building and contents

First Risk Type Value	Coverage Type				Limit Applied
	Building	Contents	Consequential	Express Agreement	
1101	1	1	0	1	Combined limit in building, contents and assets under express agreement
1110	1	1	1	0	Combined limit in building, contents and consequential losses
1111	1	1	1	1	Combined limit for all coverages

The table above shows all the possible combinations for the value of first risk type, although some of them will not be applied in practice.

For independent policies this field is compulsory, therefore the first risk type of the police must be indicated.

It is not necessary to specify the first risk type in collective policies because the maximum limit of liability is global to the four coverages. In this case, the limit should be indicated in the **LimiteMaximo** field of the TB_Capas table

It will be understood that a policy is bought on first risk when the maximum limit of liability is less than the insurable value of the asset.

Combined Maximum Limit (COMB_LIMITE_MAXIMO)
Required: **compulsory**
Format: number [in currency]
Peril: Earthquake and Hydrometeorological Phenomena

It is the maximum value of liability of the insurer combining the coverages values of the building, contents, consequential losses and assets covered under express agreement . This field operates together with the first risk type field which was previously described

Independent limits: if the **first risk type field is equal to "0000"** , it means that there is no combined limit. That is, the limit works independently for each one of the four coverages. In these cases, this field may remain blank because the System R+® will ignore it and will compute losses considering the limits independently for each coverage specified in the following fields: INM_LIMITE_MAXIMO, CONT_LIMITE_MAXIMO, CONSEC _LIMITE_MAXIMO and CONVENIO_LIMITE_MAXIMO.

Combined Limits: if the **first risk type field is different than "0000"**, it means that the policy has a combined limit in at least one of the coverages, therefore, this value should be entered in this field and will be the combination of those coverages whose value is "1" in the first risk type field.

For example, if the value of the first risk type field is "1100", it means that there is a combined limit in the coverages for building and contents which
should be indicated in the COMB_LIMITE_MAXIMO field and that there are independent limits in the coverages for consequential losses and assets covered under express agreement which in turn will be indicated in the CONSEC_LIMITE_MAXIMO and CONVENIO_LIMITE_MAXIMO fields respectively.

When the System R+® computes losses, the limit of liability is applied at the same time than the deductible and prior to applying coinsurance.

Building limit (INM_LIMITE_MAXIMO)
Contents limit (CONT_LIMITE_MAXIMO)
Consequential Losses limit (CONSEC_LIMITE_MAXIMO)
Limit for assets under express agreement
(CONVENIO_LIMITE_MAXIMO)

Required **compulsory**
Format: number [in currency]
Peril: Earthquake and Hydrometeorological Phenomena

It is the maximum value which the insurer is obliged to pay (as stipulated in the insurance contract) in the following coverages: building, contents consequential losses and assets covered under express agreement.

In collective policies: this data must be entered in the TB_Capas table under the **LimiteMaximo** column because it is global for the whole policy.

Combined Deductible (COMB_DEDUCIBLE)
Required: **compulsory**
Format: 0 to 100 [per cent]
Peril: Earthquake and Hydrometeorological Phenomena

It the percentage of the insurable value which the insurer will retain in case of loss. This field operates together with the first risk type field and depending on the combinations given to the coverages, the System R+® obtains the combined percentage.

In case of contracts whose deductibles are expressed in different ways, the insurer should recalculate the COMB_DEDUCIBLE field through technical criteria in percentage terms of the insurable value.

In independent policies: when the value of the first risk type field is equal to "0000", the COMB_DEDUCIBLE field value must be left empty, for any other combination of first risk type, the value of the combined deductible must be specified.

In semi grouped policies: this field should remain blank because it will take the deductible from each coverage.

In grouped policies: this field should remain blank because it will take a global deductible for the whole policy. Such deductible value must be indicated in the TB_Capas table.

Building deductible (INM_DEDUCIBLE)
Contents deductible (CONT_DEDUCIBLE)
Consequential Losses deductible (CONSEC_DEDUCIBLE)
Deductible for assets under express agreement
(CONVENIO_DEDUCIBLE

Required: **compulsory**
Format: 0 to 100 [per cent]
Peril: Earthquake and Hydrometeorological Phenomena

It is the percentage of the insurable value which the insured will retain in case of loss in the following coverages: building, contents, consequential losses and assets under express agreement.

In case of contracts whose deductibles are expressed in different ways, the insurer should recalculate the COMB_DEDUCIBLE field through technical criteria in percentage terms of the insurable value.

Concerning consequential losses, the deductible which corresponds to the waiting period (commonly expressed in days), must be indicated in a percentage value which is calculated dividing the number of days of such period by 365.

In independent policies: all deductibles specified as being independent in the TIPO_PRIMER_RIESGO field must be entered in their corresponding fields.

In semi grouped policies: the deductible is independent for each coverage and it must be indicated in the TB_Incisos table in the corresponding field.

In grouped policies: the deductible is global to the whole policy and it must be indicated in the TB_Capas table under the **LimiteMaximo** column always in the first row.

Note: for grouped policies, the value must be entered in currency rather than in per cent.

Combined Coinsurance (COMB_COASEGURO)
Required: **compulsory**
Format: 0 to 100 [per cent]
Peril: Earthquake and Hydrometeorological Phenomena

It is the participation percentage of the insured in the losses. This field works in conjunction with the first risk type field; the System R+® obtains the combined percentage according to the combination provided for the coverages.

In independent policies: when the value of the TIPO_PRIMER_RIESGO field is equal to "0000", the value of the COMB_COASEGURO field must remain blank, for any other first risk type combination, the combined coinsurance value must be entered in the COMB_COASEGURO field.

In semi grouped policies: this field should remain blank because the System R+® will read the coinsurance value from each coverage.

For grouped policies: this field should remain blank because the System R+® will read a global coinsurance for the whole policy. Such coinsurance must be indicated in the TB_Capas table.

Building coinsurance (INM_COASEGURO)
Contents coinsurance (CONT_COASEGURO)
Consequential Losses coinsurance (CONSEC_COASEGURO)
Coinsurance for assets under express agreement
(CONVENIO_COASEGURO)

Required: **compulsory**
Format: 0 to 100 [per cent]
Peril: Earthquake and Hydrometeorological Phenomena

It is the participation percentage of the insured in the losses in the following coverages: building, contents, consequential losses and assets under express agreement.

In independent policies: when the coinsurance is specified as being independent in the TIPO_PRIMER_RIESGO field, its value should be entered in its corresponding field according to the type of coverage.

In semi grouped policies: the coinsurance is independent for each coverage and it must be entered separately in the TB_Incisos table in its corresponding field according to the type of coverage.

In grouped policies: the coinsurance is global to the whole policy and it must be indicated in the TB_Capas table under the **Coaseguro** column.

1.3 Location Data

This set of data allows the System R+® to determine where each asset insured is located with different levels of approximation. This data is essential to compute losses. When it comes to portfolios comprising several assets, the location of each of them should be indicated.

Pay special heed on the data provided to guarantee that the location is as accurate as possible in order to avoid misleading information which may have an impact on the results of the losses computed.

The System R+® considers two approaches to track down a location:

1. Approximate location, by postal code (location code). The postal code is not very accurate in order to determine the location of the asset but it is very easy to obtain.

2. Accurate location, by geographical coordinates (longitude and latitude). Although it is highly desirable that all locations have their geographical coordinates, it is recommended that at least the most important assets of the portfolio have this information. The geographical coordinates, as will be seen later, can be obtained today through readily available tools.

Country Code (CLAVE_PAIS)
Required: **compulsory**
Format: integer
Peril: Earthquake and Hydrometeorological Phenomena

It is the code of the country specified for each asset. The System R+® uses the value of this field to ascertain which considerations are needed during the process of loss computation. The System R+® is configured to run one or more countries depending on the acquired license and the user's needs.

The System R+® uses the International Country dialing codes as the country codes. For instance, in Mexico the country code used is 52. For further information on this, please refer to the Countries Codes Catalog.

Postal Code (CODIGO_LOCALIZACION)
Required: **compulsory if there are no coordinates**
Format: integer
Peril: Earthquake and Hydrometeorological Phenomena

On the whole, the postal code (zip code in the United States) is a system of assigning different codes to geographical locations. In different countries, different postal codes are used. In some countries postal codes are merely series of numerical characters while in others they contain both alpha and numeric characters. Likewise, the postal codes used in the System R+® comprise several numbers depending on the country.

Longitude (LONGITUD)
Latitude (LATITUD)
Required: **optional**
Format: number
Peril: Earthquake and Hydrometeorological Phenomena

They both refer to the location of the asset in terms of geographical coordinates, in decimal notation (minutes and seconds should be changed to this notation). Because one degree is approximately equivalent to 100 km, at least four decimals should be included in order to have a minimal accuracy of +10m.

The geographical coordinates can be determined in several ways:

- By using very detailed maps.

- By using GPS devices (image 1 a). In this case, take into account that the resolution of some devices may vary which could be particularly serious if the given coordinates specify a location in the sea which the System R+® will not recognize and would rather locate the asset by reading the postal code instead.

- Through Internet, with a tool such as Google Earth® (see Image 1b below). Although, in this case Google Earth® would need to be configured in order handle coordinates in decimal degrees since by default the coordinates are displayed in a degrees-minutes-seconds pattern.

Image (1a)   **Image (1b)**

Images 1a and 1b. Options to obtain the location coordinates: (a) a GPS device used during damage inspections and (b)   a Google Earth® image showing that it is possible to get the exact coordinates of practically any location.

Note: If geographical coordinates are indicated, the System R+® will assume that this information is accurate and will not take into account the postal code. However, if the longitude-latitude coordinates belong to an offshore location, the System R+® will detect that as an error and will locate the asset by means of the postal code.

Front Sea (PRIMERA_LINEA_MAR)

Required: **compulsory**
Format: integer [1: near the sea; 0 no near the sea]
Peril: Hydrometeorological Phenomena

It must be specified if the asset is located near the sea or not. This is necessary to compute losses due to wind, storm surge, tsunami and flood. It must be indicated if the asset is located less than 500 meters from the high tide shore line.

Front Water (PRIMERA_LINEA_LAGO)

Required: **optional**
Format: integer[1: near any body of water; 0: not near any body of water]
Peril: Hydrometeorological Phenomena

It must be specified if the asset is located near a body of water or not. This is necessary to compute losses due to flood. It must be indicated if the asset is located at least 250 meters near a lake or lagoon. When this data is unknown,

the Front Water field must be left empty and the System R+® will assume that the asset is not near any body of water regardless its occupancy type.

1.4 Data of the structure

The next set of data will allow the System R+® to determine the vulnerability of each structure within the database.

There are two data groups which help define this vulnerability:
1) Technical information to know the construction class
2) Information regarding other structural characteristics.

1. Technical information to define the construction class

It is specifically used to assign the construction class. Some examples are Concrete Frames Structures, Steel Frames, Flat Slab, Concrete Walls and Masonry Walls among others.

The field where the construction class is specified is TIPO_CONSTRUCCION (CLASE_SISMO in the regulatory version of the System R®).

2. Other structural characteristics

These data provide additional information about some particular characteristics which define with much more accuracy the vulnerability of the asset insured. Some examples of such characteristics are irregularities in plant and elevation, pounding, differential subsidence, whether the asset is located on a corner, etc.

Construction Class (TIPO_CONSTRUCCION or CLASE_SISMO)
Required: **compulsory**
Format: alphanumeric characters
Peril: Earthquake and Hydrometeorological Phenomena

The construction class defines an structural type or a set of elements of the construction capable of bearing loads without an excessive distortion. It is essential for System R+® to define the structural type of the buildings and industrial plants because this will determine their behavior before natural phenomena. This behavior is expressed through vulnerability functions for each

type of construction. The System R+® has several Construction Classes depending on both the country and the peril to be assessed. For further information with respect to the Construction Classes which the System R+® handles, please refer to the Construction Classes Catalog.

Occupancy Type (USO_INMUEBLE)
Required: **compulsory**
Format: integer [1 to 30]
Peril: Earthquake and Hydrometeorological Phenomena

The main type of use or activity carried out in the asset must be specified according to the **Catalog of Occupancy Type** table. If the desired option is not specifically provided, the occupancy which most nearly resembles must be selected.

The importance of selecting an occupancy type is because the structure's design is based on its use, therefore the System R+® also takes into account these considerations. The use is also important because it defines the type of contents and its vulnerability.

It is common that one policy contains some buildings with different occupancy types. In these cases it is recommended to specify each one of them with their respective code in order to obtain a more accurate computing of losses.

CATALOG OF OCCUPANCY TYPE

Code	Occupancy Type
1	Warehouse
2	Bank
3	Library
4	Communication center
5	Central Electric
6	Mall
7	Commercial
8	Explosive substances warehouse
9	Flammable substances warehouse
10	Toxic substances warehouse
11	School
12	Parking
13	Factory
14	Funeral Homes
15	Hangar
16	Hospital
17	Hotel
18	Industry
19	Laboratory
20	Bookstore
21	Museum
22	Government office
23	Private office
24	Restaurant
25	Emergency services
26	Transportation terminal
27	Department store
28	Dwellings (regular houses)
29	Other
30	Gas station

Note: in the case of Hydrometeorological Phenomena, the occupancy type is not required because it is already defined in the construction classes which the System R+® uses for this type of hazard.

*Irregularities in plant(IRRE_PLANTA).*
Required: **optional**
Format: integer [1 to 3]
Peril: Earthquake and Hydrometeorological Phenomena

Irregularity in plant should be defined following the next criteria:

1 Null irregularity.
2 Slight irregularity.
3 High irregularity.

On the whole, simple, symmetrical and regular structures have a better behavior than those which do not have such features. Under the action of Earthquakes, irregular and asymmetric structures tend to present torsion movements that cause severe damage.
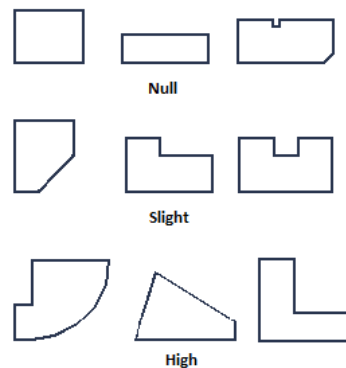
Image. Irregularity in plant

Number of stories (NUM_PISOS)
Required: **compulsory**
Format: integer [1 to 55]
Peril: Earthquake and Hydrometeorological Phenomena

It corresponds to the number of stories of the building to be assessed. The number of stories must be enumerated from the ground floor without including basements. If the building is located on a hill and is stepped due to the slope, the number of stories should be counted from the lowest floor. Mezzanines should be considered as floors. Some examples of these cases are shown in the image below:
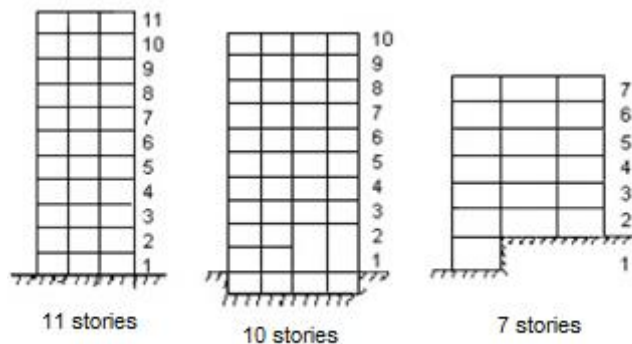
Image. Examples of buildings with different number of stories.

Built Year (AÑO_CONSTRUCCION).
Required: **optional**
Format: integer [from 1325 to 2040]
Peril: Earthquake

It specifies the year when the asset was built. The built year indicates indirectly the construction code used for its design. As time passes, the construction codes have been importantly modified, especially for seismic design of some structural types. In order to know the built year of the asset, you can ask its owner about it or refer to the structural or architectural plans.

Short Column (COLUMNAS_CORTAS).
Required: **optional**
Format: integer [0 or 1]
Peril: Earthquake

It should be specified if:

(1) there are short columns in the asset
(0) there are no short columns in the asset

In general, short column is defined as a column whose relative dimensions ensure that when it is overloaded it fails by crushing, rather than buckling. The height of a short column gets shortened due to the presence of architectonic elements attached to it. Such architectonic elements usually include parapets, gables or mid-height walls attached to the column and may be of masonry (brick or block) or of concrete. The short columns, if any, can be located in facades, although they could also be found inside the building.

In order to consider a column as being short, the relation between the parapet's height and the mezzanine's height must be greater than or equal to 0.25, that is to say, the parapet's height should be at least a quarter than the column's height. In addition, both the parapet and the column have to be closely connected to each other.

The existence of short columns in a structure makes it considerably more vulnerable; therefore, it will be of vital importance to identify its possible existence which can relative simple.

Overloaded (SOBREPESO).
Required: **optional**
Format: integer [0 or 1]
Peril: Earthquake

It should be defined if:

(1) The structure of the asset is being overloaded
(0) The structure of the asset is not being overloaded

The structures are designed for a level of load according to the occupancy type of the asset. However, some changes in the usage during their lifetime may imply an important variation in the load imposed to the structure. An example of this situation is the case of a building from the sixties designed to be used as an office block while today it has become a fabric warehouse.

Another situation that may result in overloading is seen in those offices where there are plenty of paper and documents in almost in the entire building and also in its upper floors.

A building should be considered overloaded only when its overload is located in most of its surface.

Possibility of pounding (GOLPETEO).
Required: **optional**
Format: integer [1 to 4]
Peril: Earthquake

It should be defined if the building may suffer pounding damage during an earthquake. When it comes to specifying whether the building may suffer pounding damage, the Catalog **of possibility of pounding** should be used. The pounding between buildings may cause important damage to one or both of the buildings involved. Pounding between closely spaced building structures can be a serious hazard in seismically active areas. To prevent this situation from happening during an intense earthquake, the clearance between two buildings must be approximately 3 cm per each floor in the building having the lowest height. If the clearance between the two buildings is smaller, you should indicate that pounding is likely to happen.

CATALOGUE OF POSSIBILITY OF POUDING

Code	Possibility of Pounding
1	Against buildings of lower height
2	Against building of greater or equal height
3	Against buildings with either lower or greater height
4	Pounding damage is not likely to happen

To illustrate how to predict the possibility of pounding damage, the image below depicts two adjacent buildings: one is a 11-story building and the other is a 7-story building. The actual clearance between them is 14 cm, but the smallest building is estimated to will have a maximum displacement of 7 levels per 3 cm each level which is equal to 21 cm. Taking into account that the actual clearance between them (14 cm) is shorter than the recommended, the pounding damage is likely to happen during an intense earthquake.

Image. Pounding

Located on a corner (ESQUINA).
Required: **optional**
Format: integer [0 or 1]
Peril: Earthquake

It should be defined if:

(1)   The asset is located on a block's corner
(0)   The asset is not located on a block's corner.

A building located on a block's corner is more vulnerable before the action of earthquakes if the adjacent walls to the adjoining constructions are much more resistant than the facade frames (columns and beams) and are not suitably detached from one to another. If so, the building will have a great deal of irregularity in plant producing torsions and a undesirable behavior, mainly in the facades which turn out to be more flexible and less resistant.

When the building in the corner is symmetrical or has the adjacent walls suitably detached from the main structure, the value of this field must be set to 0.

Irregularities in elevation (IRRE_ELEVACIÓN).
Required: **optional**
Format: integer [1 to 3]
Peril: Earthquake

If the building has irregularities in its elevation, one of the following values must be specified:

(1)   Null irregularity
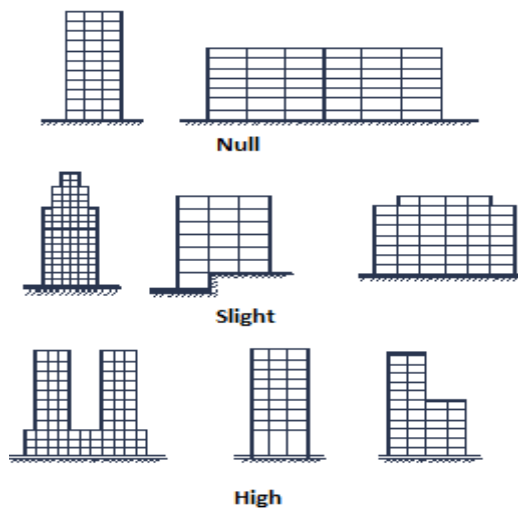(2)   Slight irregularity
(3)   High irregularity

Image. Irregularity in elevation

The structure is more vulnerable when the distribution of the resistant elements in the elevation is not uniform.

Typical configurations which qualify a building with high irregularities in elevation are:
- Buildings with a very high first mezzanine compared to the rest of the stories.
- Buildings with any mezzanine much higher than the rest of the stories.
- Buildings where the elevation is interrupted at certain level and has not been detached from the rest of the structure.
- Buildings where important structural elements (columns or walls) are interrupted before reaching foundations.

Differential subsidence (HUNDIMIENTOS).
Required: **optional**
Format: integer [0 or 1]
Peril: Earthquake

It should be defined if the building:

(1)   Has differential subsidence
(0)   Has no differential subsidence

The differential subsidence generates effects that may be noticeable at first glance because of the structure's collapses (slanted with respect to the vertical) or by diagonal cracking in partitions or load-bearing walls. If the settlements are small, non structural and finished elements will be affected, unlikely of affecting the stability of the structure. However, when the differential settlements are large and noticeable at first glance, its effects over the elements of the structure may be considerable.

Differential subsidence is more likely in soft ground zones and may be produced because of an earthquake, as a result of the construction of a neighboring construction or by defects in foundations.
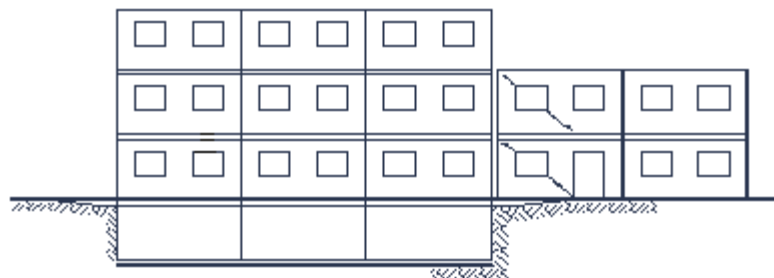

Image. Differential subsidence

Previous damage (DAÑOS_PREVIOS).
Required: **optional**
Format: integer [0 or 1]
Peril: Earthquake

it should be defined if the building has suffered previous damage according to the following criteria

(0)   Building without previous damage
(1)   Building with previous damage

A structure, which has been damaged during an earthquake, has showed its great vulnerability. It is evident that those buildings, which collapsed or suffered serious damage during intense earthquakes, had been damaged during previous ground movements already.

In general terms, it would be very hard to identify structural damage of a building if it has had an adequate maintenance program. Nevertheless, an adequate maintenance is not a guarantee that the structure will have a satisfactory performance in future earthquakes.

It is possible to find hints of previous damage in those places or parts of the structure that generally are not visible, like adjoining walls, installations ducts, stairs or elevators shafts, basements and structural elements covered by plafonds or finishing. The best way of knowing if there has been damage is by asking the owners or occupants, although this information is limited to the most recent years. If signals of structural damage from previous earthquakes are not identified, 0 should be entered in this field.

Repaired (FUE_REPARADO).
Required: **optional**
Format: integer [0 or 1]
Peril: Earthquake

it should be indicated if:

(1)   Any previous damage was repaired
(0)   Any previous damage was not repaired

When a structure has been damaged, it may have had structural and nonstructural repairs. In general terms, it will not be easy to identify the type of repair that the asset had, although this can be known either by reviewing calculation reports or by inspecting adjoining walls, installations ducts, stairs and elevators shafts, basements, structural elements covered by plafonds, etc. If the repair consisted of patching shallow cracks, it should be indicated that they were not repaired, which is number "0". To repair implies to provide that structure ,once again, with its former seismic resistance capacity.

Retrofitted (FUE_REFORZADO).
Required: **optional**
Format: integer [0 or 1]
Peril: Earthquake

It should be defined whether the structure:

(0)   Has not been retrofitted
(1)   Has been retrofitted

From the structural point of view, to retrofit is more than repairing. To retrofit implies modifying and improving the seismic resistance characteristics of the construction.

In professional practice, specifically in Mexico, the most common ways used to retrofit the structures have been cross-bracing with steel sections or cables, casing of columns and concrete beams by means of steel lattice or inclusion of concrete walls. Normally, these repairs are so widespread that they cannot be hidden at all, so their identification is relatively easy; although in some cases they may be hidden due to some architectonic finishing. It is recommended to check on stairs and elevators as well as side and rear facades.

Reinforcement year (AÑO_REFUERZO).
Required: **optional**
Format: integer [from 1325 to 2040]
Peril: Earthquake

If the structure has been reinforced as described above, the year of reinforcement must be indicated because it will implicitly indicate the construction code in force during the reinforcement.

Floor (PISO)
Required: **optional**
Format: integer [1 to 57]
Peril: Hydrometeorological Phenomena

It refers to the floor on which the asset insured is located. This is relevant in the case of homes and offices insured whose policies do not cover the entire property, especially when the asset is located on upper floors which are not vulnerable to flood due to tsunami, storm surge, rain or overflowing rivers. In the case of mortgage housing where only the floor is specified (on which the asset is located), the System R+® will take this data as valid for computing losses. If it is unknown, it must be left empty.

Difference of elevation in the ground floor (SOBREELEVACION_DESPLANTE)
Required: **optional**
Format: meters [-10 to 10]
Peril: Hydrometeorological Phenomena

The difference in elevation, in meters, between the finished floor level of the ground floor of the asset, not including basements, and the average level of the surrounding ground (which in the system is provided by a digital terrain elevation model, DEM , from the location data).
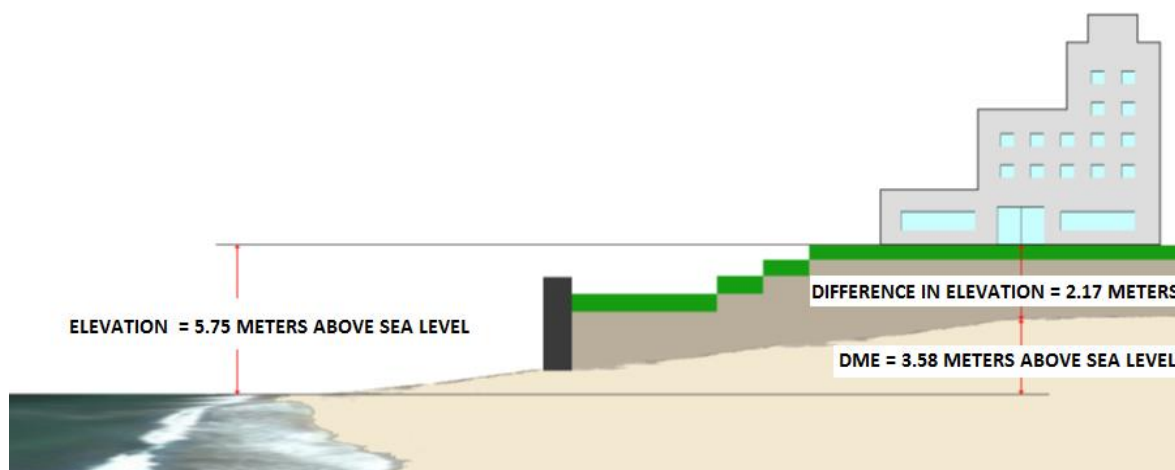
Image. Difference of elevation of the finished floor level with respect to the digital terrain elevation model (DME). In this example the difference of elevation is equal to 2.17 m

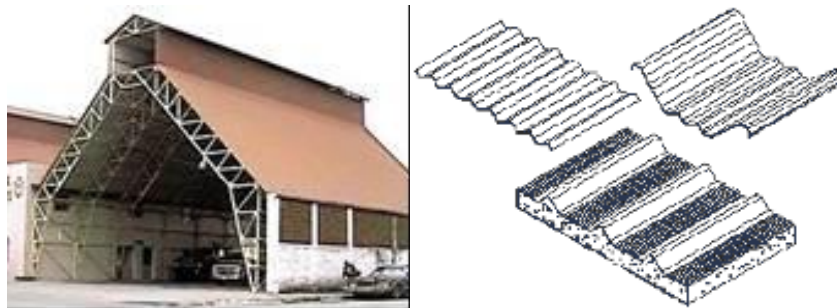## Roof Cover type (TIPO_CUBIERTA)
Required: **compulsory**
Format: integer [1 to 4]
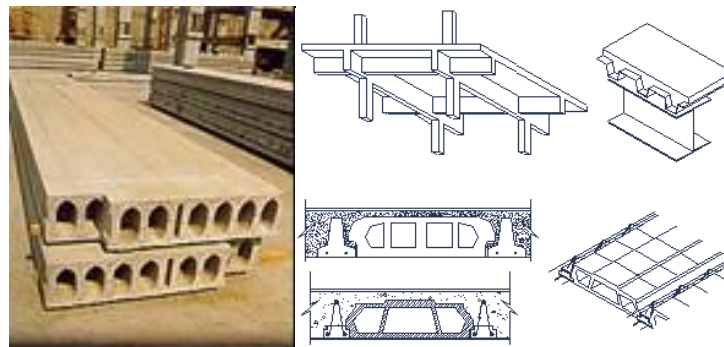Peril: Hydrometeorological Phenomena

You must specify the weight of the predominant material and design of the roof of the asset. The roof cover is considered as being light if it is built with one of the following materials: metal foil, translucent sheet, asbestos sheets, precast systems of thermal insulation sheets and sheets keyed, among others. The roof cover is considered as being heavy if built with any of the following materials: concrete slabs, precast concrete and slab zero with concrete compression layer, among others. It should be indicated one of the options below:

(1)   Heavy Cover
(2)   Light Cover with no structural or craft design
(3)   Light Cover with specific design (there are calculation reports based on regulations or codes which explicitly consider the forces and actions of the place)

If this data is unknown, the field must be left empty. The roof cover type is relevant in hazards due to wind and hail, since it sets a remarkable difference regarding the vulnerability of the assets.

Light Cover

Heavy Cover

Image. Industrial buildings with different roof cover types

Roof Cover Geometry (FORMA_CUBIERTA)
Required: **optional**
Format: integer [1 to 5]
Peril: Hydrometeorological Phenomena

It should be specified the geometry of the roof cover. Flat roofs are very vulnerable to wind when forces due to suctions attempt to detach the cover from its supports; pitched and curved roofs are less vulnerable to wind. Vortices or swirls are generated in saw-shaped roofs and they tend to damage some areas.

The roof cover pitch is also very important given the accumulation of hail. If the geometry is unknown, this field must be left empty. It should be specified one the following options:

(1) Horizontal (flat)
(2) Pitched with average slope, less than 30 degrees
(3) Pitched with high slope, greater than 30 degrees
(4) Saw-shaped
(5) Curve-shaped

Nearby lamp posts, billboards or trees (OBJETOS_CERCA)
Required: **optional**
Format: integer
Peril: Hydrometeorological Phenomena

The presence of lamp posts, telephone poles, billboards, trees and other large objects which may collapse on a portion of the asset insured pose a clear danger to be taken into account. If this data is unknown, the field must be left empty. It should be specified one of the following options:

(1)   There are nearby objects
(2)   There are no nearby objects

Objects which might fall off from the roof (AZOTEA)
Required: **optional**
Format: integer
Peril: Hydrometeorological Phenomena

Objects such as tiles, satellite dishes, billboards, telecommunication equipment, radio antennas and air conditioning/ventilation equipment placed on the roof of the asset insured, are likely to break off and fall by the action of strong winds. In addition of posing a direct danger, it can also cause other type of damage to the asset. It should be specified one of the following options:

(1) Yes, there are objects which might fall off
(2) No, there are not objects which might fall off

Glass size in facades (TAMAÑO_CRISTAL)
Required: **optional**
Format: integer [1 to 3]
Peril: Hydrometeorological Phenomena

It should be defined roughly the size of glass exposed on the insured asset according to the following criteria:

(1)   Small, less than 0.5 m^2
(2)   Medium, between 0.5 and 1.5 m^2
(3)   Large, greater than 1.5 m^2

The size of glass is defined by the independent area within the supporting frame which acts as a support toward which pressure, due to wind, is transmitted. Large glass is more vulnerable than small glass (as long as they are the same thick) to wind forces and impact due to objects and hail. If it is unknown, this field must be left empty.

Glass Type Code (TIPO_VENTANAS)
Required: **optional**
Format: integer [1 to 3]
Peril: Hydrometeorological Phenomena

It defines a code that represents the type of glass present on the asset.

It should be defined the type of vulnerability and its protection in the windows of the facades. Tempered glass is more resistant to wind pressure or hail impact due to mechanical properties acquired during its manufacture. The same applies, more obviously, to mud walls and anticyclonic curtains. Plastic films found on glass provide protection against damage which either may be caused by windblown objects such as tree branches, tiles and sheets or due to hail impact (such protection helps to reduce interior damage of the assets and their contents).

It should be specified the type of vulnerability which best suits the asset in accordance with the following options:

(0)   Low , windows which have anticyclonic curtains, mud walls or plastic films regardless of the thickness of the glass

(2)   Medium, windows which have thick glass, tempered glass or plain wooden mud walls, regardless of the thickness of the glass. Glass is considered to be thick when its thickness is greater than 10 mm

(3)   High, windows which have very thin glass without neither mud walls nor anticyclonic curtains. Glass is considered to be thin when its thickness is less than 10 mm

It is possible that one single asset has different window types, for example, on the ground floor there may be just anticyclonic curtains while the rest of the stories there may be mud walls or exposed glass of any kind. In this case you must indicate the predominant type of windows in the asset.

Types of domes (TIPO_DOMOS)
Required: **optional**
Format: integer [1 to 4]
Peril: Hydrometeorological Phenomena

It should be defined the vulnerability of the domes and skylights. Tempered glass is more resistant to wind pressure or hail impact because its mechanical properties acquired in its manufacture. The same occurs, even more obviously, with mud walls and anticyclonic curtains. Plastic films on glass provide protection against damage that may be caused either by windblown objects such as tree branches, tiles and sheet objects or by hail impact (such protection helps to reduce interior damage of the asset and its contents). It should be specified the type of vulnerability which best suits the asset in accordance with the following criteria:

(1)   Null, the asset has no domes

(2)   Low, domes have anticyclonic curtains, structural mud wall or plastic films, regardless of the thickness of the glass

(3)   Medium, domes have thick glass, tempered glass or plain wooden mud walls. Glass is considered to be thick when its thickness is greater than 10mm

(4)   High, domes have either thin or acrylic glass, without mud walls or anticyclonic curtains. Glass is considered to be thin when its thickness is less than 10 mm

Windows support (SOPORTE_VENTANA)
Required: ***optional***
Format: integer [1 to 3]
Peril: Hydrometeorological Phenomena

It should be defined the type of support in facades (windows) and ceilings (domes and skylights). Those windowpanes, windows, domes or skylights which do not have rigid support frames (aluminum, steel or wood) but only glass support or ironwork are very vulnerable to wind pressure because they are not well supported. If this data is unknown, the field must be left empty. It should be used one of the options below:

(1)   Support without structural or craft design (based on the experience of the personnel performing the installation of windows and who do not have expertise on current legislation)

(2)   Support with generic design which does not take into account the local conditions which the installed element will be exposed to, as in the case of windows manufactured in large batches which are sold with anchoring elements and standard separations

(3)   Support with specific design where there is a calculation report based on a certain regulation or code which explicitly considers forces and actions of the site.

Percentage of glass in facades (PORCENTAJE_CRISTAL_FACHADAS)
Required: **optional**
Format: integer [1 to 3]
Peril: Hydrometeorological Phenomena

It should be specified the total approximate percentage of the exposed area covered with glass in facades with respect to the total area exposed. Buildings which have large glass areas have major damage due to wind and hail impact. There are buildings which are thoroughly covered with glass. The minimum percentage to use for this field is the one which results of quantifying only the windows area. If this data is unknown, it must be left empty. It should be used one of the options below:

(1)   Low Percentage, less than 30%
(2)   Average Percentage, between 30 and 60 %
(3)   High Percentage, greater than 60 %

Type of domes(PORCENTAJE_DOMOS)
Required: **optiona**
Format: integer [1 to 4]
Peril: Hydrometeorological Phenomena

It should be specified the total approximate percentages of the exposed area or covered with domes with respect to the total area of the roof of the asset. Buildings which have large domes are more vulnerable to wind and hail impact. If this data is unknown, it should be left empty. It should be specified one of the options below:

(1)   Null percentage, 0 %
(2)   Low percentage, less than 10%
(3)   Average percentage, between 10 % and 25 %
(4)   High percentage, greater than 25 %

(a) Stained glass in facade　　　*(b) Domes and skylights*

Image. Windows and stained glass in facades, domes and skylights

Fragile stuff: Drywall, plastic and roofing sheets in facades (FACHADA)
Requires: **optional**
Format: integer [1 to 4]
Peril: Hydrometeorological Phenomena

It should be generally specified the presence of fragile materials such as drywall, plastic and roofing sheets in facades, ceilings and exposed plafonds. These materials easily yield to the forces of wind and leave openings which trigger other damage, many times higher than the same fault of those. If this data is unknown, it should be left empty. It should be specified one of the options below:

(1)   There is no presence of such materials (0% of the exposed area in facades and roots)

(2)   There is presence of these materials only in some places (less than 20 % of the exposed area in facades and roofs)

(3)   There is presence of these materials in many areas (between 20% and 50 % of the exposed area in facades and roofs)

(4)   Widespread presence of these materials (greater than 50 % of the exposed area in facades and roofs)

Retaining Walls (MUROS_CONTENCION)
Required: **optional**
Format: integer [1 to 4]
Peril: Hydrometeorological Phenomena

It should be specified the type of retaining wall to the sea, river or lagoon or if this data is unknown, it should be left empty. Specify one of the options below:

(1)   Reinforced concrete with deep foundation
(2)   Reinforced concrete with shallow foundation
(3)   Masonry wall / stonemasonry
(4)   There is no retaining wall

When this data is not specified, if the asset is located in front of the sea, the System R+® will consider a reinforced concrete retaining wall with shallow foundation. When the asset is not in front of the sea, the System R+® will consider there is no retaining wall.

1.5 Special Data

Outstanding Loss Reserves (RESERVA).
Required: **compulsory (used only in Mexico)**
Format: integer [0 or 1]
Peril: Earthquake and Hydrometeorological Phenomena

It should be specified if the asset:

(1)   will not be considered in the outstanding loss reserves computation
(2)   will be considered in the outstanding loss reserves computation

When outstanding loss reserves (OSLR) are taken into account in the evaluation process, the System R+® carries out two processes: the former considers all the assets included in the OSLR while the latter considers all the assets which are excluded from the OSLR.

Once the evaluation processes are finished, the System R+® will display two tables The upper one will display the premiums related to those assets which were excluded from the OSLR whereas the lower one displays the sum of premiums from all assets (the ones which were included and excluded from the OSLR).

Quota Share (CP)
First Excess (1X)
Second Excess (2X)
Facultative (FAC)

Required: **compulsory**
Format: 0 to 100 [percent]
Peril: Earthquake and Hydrometeorological Phenomena

It is the distributed percentage which represents the liability of the insurance company   for each case (Quota Share, First Excess, Second Excess and Facultative) once the part of the obligations ceded in proportional reinsurance contracts has been discounted with respect to the total obligation signed in an insurance contract.

2. Data definition for Collective Portfolios

In this section you will find data identifying the features of both collective policies and policies with layers.

Collective Policies are those which group two or more assets with a unique limit of liability, therefore, they must contain at least one layer which defines such limit or several layers which define the reinsurance schemes, common to all the assets.

An Independent policy may have layers only if it shares a unique maximum limit of liability in all the coverages (building, contents, consequential losses and assets under express agreement). To do so, it must define a header, just like the case of collective policies, and also the scheme layers which are needed to define the non proportional reinsurance. To sum up, an independent policy may have layers only if it is modeled as a collective policy with one record.

The database for collective policies comprises three tables: TB_Incisos (described in section 1), TB_Capas and TB_DatosGenerales. In practical terms, the TB_DatosGenerales table is related, through the number of policy, to the other two tables to form collective policies. You can see the entity relation diagram in the image below:
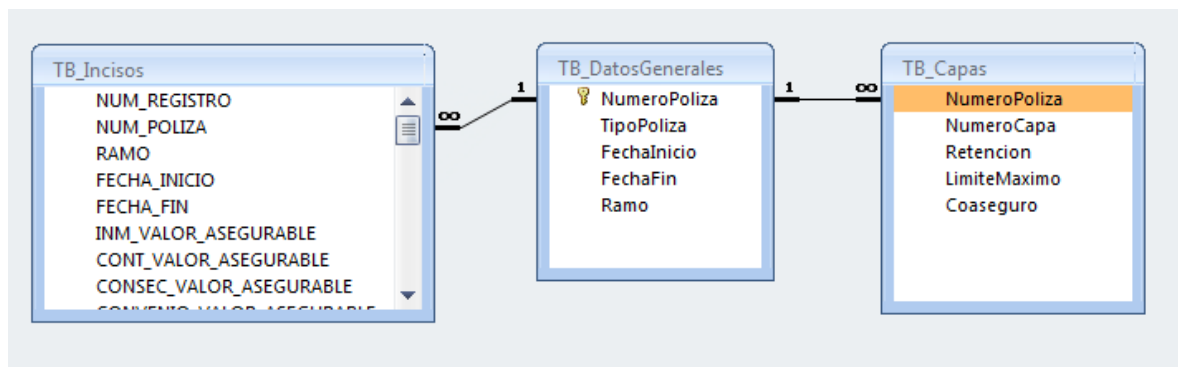

Image. Entity relationship diagram for Collective Policies

In the TB_Incisos table, each of the records (locations) is related to one single policy by means of a header which has its referential data as shown in the following image:

Image. Relationship between the tables TB_DatosGenerales   and TB_Incisos

This header is also used to define those layers which hold global values and reinsurance variables, as depicted in the image below:

Relationship between the tables TB_DatosGenerales and TB_Capas

Collective portfolios are input into the System R+® as Microsoft Access® databases. The different fields which make up a collective portfolio are included in three tables named TB_Incisos, TB_Capas and TB_DatosGenerales. The names of such tables must be the same and their structure is exactly as described in the following sections.

Because the table TB_Incisos was described in section 1, just the structure of the remaining two tables will be fully described. The structure of the tables TB_DatosGenerales and TB_Capas is displayed in the following two tables:

GENERAL DATA FOR COLLECTIVE PORFOLIOS WITH LAYERS

Table TB_DatosGenerales					
Group	**No.**	**Field**	**Data Type**	**Range of values**	**Required**
General	1	NumeroPoliza	Alphanumeric		Compulsory
	2	TipoPoliza	Integer	1 or 2	Compulsory
	3	FechaInicio	Date	01/01/2010 or later	Compulsory
	4	FechaFin	Date	01/01/2011 or later	Compulsory
	5	Ramo	Alphanumeric	SISMO/HIDRO	Compulsory

FINANCIAL DATA FOR COLLECTIVE PORTFOLIOS WITH LAYERS

Table TB_Capas					
Group	**No.**	**Field**	**Data Type**	**Range of values**	**Required**
Financial	1	NumeroPoliza	Alphanumeric		Compulsory
	2	NumeroCapa	Alphanumeric		Compulsory
	3	Retención	Percentage	0 to100	Compulsory
	4	LimiteMaximo	Currency	0 to billions	Compulsory
	5	Coaseguro	Percentage	0 to 100	Compulsory

2.1 General data definition in the TB_DatosGenerales table

TB_DatoGenerales is the main table in a database of collective policies, It is related to the other two tables (TB_Incisos and TB_Capas) by a primary key in the **NumeroPoliza** field. This table contains all the information of all the collective policies.

Policy number (NumeroPoliza)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake and Hydrometeorological Phenomena

It is the key which identifies each collective policy. The value of this field must be unique and cannot be repeated because it is essential to create the relationship between the other two tables (TB_Incisos and TB_Capas).

This field is used to link one collective policy with the assets which are part of it. Such assets are found in the TB_Incisos table and must have the same policy number used in this field including uppercase, lowercase and special characters. As stated before it is defined as primary key in the Microsoft Access® database file.

Type of collective policy (TipoPoliza)
Required: **compulsory**
Format. integer [1 or 2]
Peril: Earthquake and Hydrometeorological Phenomena

This field is used to classify the type of collective policy, it should be defined by using one of the options below:

(1)   Semi-grouped: these policies share the same maximum limit of liability and both deductible and coinsurances are read for each asset in the TB_Incisos table

(2)   Grouped: these policies share the same maximum limit of liability; deductible and coinsurances are global to the whole policy.

These options also apply to independent policies modeled as collective policies so that in this way the user can enter reinsurance schemes layers.

Inception date of a collective policy (FechaInicio)
Expiration date of a collective policy (FechaFin)

Required: **compulsory**
Format: date (it is country dependant)
Peril: Earthquake and Hydrometeorological Phenomena

These two fields have the same definitions given in the TB_Incisos table.

Peril (RAMO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake and Hydrometeorological Phenomena

It has the same definition given earlier in the TB_Incisos table.

2.2 Layers Definition in the TB_Capas table

In this section of the manual, you are provided with the means of entering a layer scheme to define the non proportional reinsurance in collective or independent policies (the latter ones will be evaluated as collective policies of one record).

Each policy can have a different number of layers which corresponds to different reinsurances contracts with several insurance companies and with different limits and priorities. The layers are defined by the number of rows in the corresponding table.

The image below depicts two collective policies with four layers each. As you can see, there are two tables, the upper table displays the layers corresponding to a **semi-grouped** policy whose layers scheme is depicted to the left whereas the lower table displays the layers corresponding to a **grouped policy** whose layers scheme is being depicted to the right.
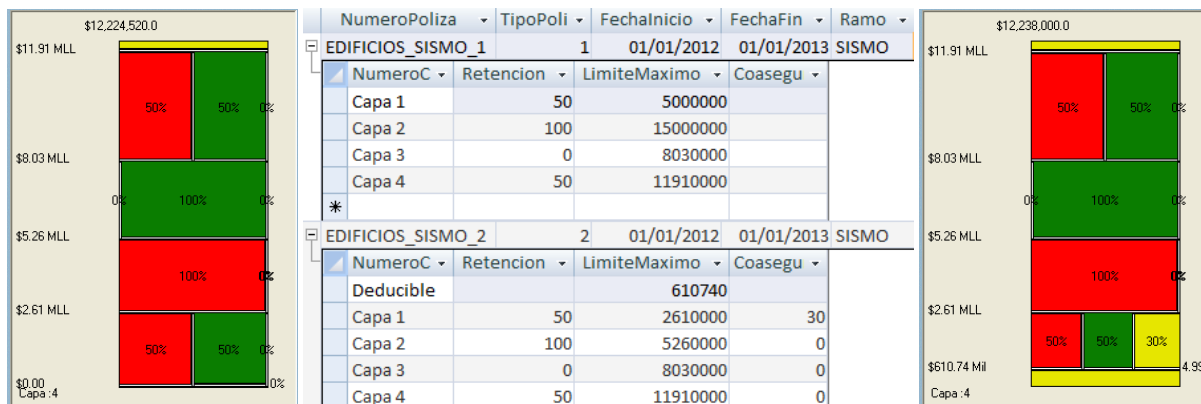

Image. Collective policies with layers schemes

Remember that TipoPoliza = 1 refers to a semi-grouped policy and that TipoPoliza = 2 corresponds to a grouped policy.

Number of policy (NumeroPoliza)
Required: **compulsory**
Format: alphanumeric

This field has the same description given previously in the TB_Incisos table.

Layer Number (NumeroCapa)
Required: **compulsory**
Format: alphanumeric

It is a code used to identify the layer number of the policy. It is alphanumeric and it is recommended to enter the word "**Capa**" followed by the number of the layer that corresponds.

Layers generally start from the layer one which is denoted as "**Capa1**" but in the case of grouped polices the first layer is always used to enter the **Deductible** value as shown in the lower table from the image above.

Retention Percentage per layer (Retencion)
Required: **compulsory**
Format: 0 to 100 [per cent]

See the PORCENTAJE RETENCION description provided earlier. In each layer a retention percentage must be defined with the exception of the layer (record) where the Deductible value is specified because in such layer, this field must remain empty.

Limit of the layer (LimiteMaximo)
Required: **compulsory**
Format: number [currency]

It is the maximum value of liability of the insurance company in its participation. To completely define a layer, both the limit and the priority must be determined (priority is the maximum amount which the insurer decides to pay up). For practical purposes, the priority is taken as the limit of the previous layer and in the case of the first layer, the priority is equal to zero. In grouped policies, the limit of the first layer is the deductible of the policy.

Coinsurance of the layer (Coaseguro)
Required: **compulsory**
Format: 0 to 100 [per cent]

It refers to the participation percentage of the insured per layer. In the case of semi-grouped policies, it is not necessary to enter this value because the coinsurance is provided for each asset in the TB_Incisos table. In grouped policies, the coinsurance of the first layer must remain empty as it is only used to enter the Deductible value.

3. Data definition for Portfolios of Clusters (Colombia, Mexico and Peru)

In this section, you will find the structure of the data for portfolios of clusters which can be evaluated by the System R+®just for Colombia, Mexico and Peru (according to the license acquired). This type of portfolio comprises three tables: TB_Cumulos, TB_Capas and TB_DatosGenerales.

3.1 The TB_Cumulos table

In this table, you should enter the aggregate values per zones. It comprises eleven fields whose structure is shown in the table below:

DATA FOR CLUSTERS

Table TB_Cumulos					
Group	**No.**	**Field**	**Data Type**	**Values**	**Required**
Reference	1	ID_Contrato	Alphanumeric		Compulsory
	2	RAMO	Alphanumeric	SISMO	Compulsory
	3	GIRO	Alphanumeric		Compulsory
Financial	4	INM_VALOR_ASEGURABLE	Currency	0 to billions	Compulsory
	5	CONT_VALOR_ASEGURABLE	Currency	0 to billions	Compulsory
	6	CONSEC_VALOR_ASEGURABLE	Currency	0 to billions	Compulsory
	7	CONVENIO_VALOR_ASEGURABLE	Currency	0 to billions	Compulsory
	8	DEDUCIBLE	Percentage	0 to 100	Compulsory
	9	COASEGURO	Percentage	0 to 100	Compulsory
Location	10	CLAVE_PAIS	Integer	52, 51, 53	Compulsory
	11	NUM_CUMULO	Alphanumeric		Compulsory

Contract Number (ID_Contrato)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It refers to the code used by the user to identify each record of the contract.

Peril (RAMO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

See the definition of this field in the corresponding section from the TB_Incisos table description.

Line of Business (GIRO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

This field identifies the type of line of business of the portfolio. The available options are show below:
- Commercial
- Industrial
- Mortgage
- Residential
- Hotel

Insurable value of the asset (INM_VALOR_ASEGURABLE)
Insurable value of contents (CONT_VALOR_ASEGURABLE)
**Insurable value of consequential losses
(CONSEC_VALOR_ASEGURABLE)**
**Insurable value for assets under express agreement
(CONVENIO_VALOR_ASEGURABLE)**

Required: **compulsory**
Format: number [currency]
Peril: Earthquake

See the definition of these fields in the corresponding section from the TB_Incisos table description.

Deductible (DEDUCIBLE)
Required: **compulsory**
Format: 0 to 100 [per cent]
Peril: Earthquake

See the corresponding definition from the TB_Incisos table description.

Coinsurance (COASEGURO)
Required: **compulsory**
Format: 0 to 100 [per cent]
Peril: Earthquake

See the definition of the field in the corresponding section from the TB_Incisos table description.

Country Code (CLAVE_PAIS)
Required: **compulsory**
Format: integer
Peril: Earthquake

See the corresponding definition from the TB_Incisos table description.

Number of Cluster (NUM_CUMULO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It refers to the number of grouping zone to which each of the records belongs. Grouping zones are defined depending on the country in which you need to assess portfolios of clusters. For further information on grouping zones per country, refer to the "Grouping Zones Per Country" catalog.

3.2 General data definition for clusters in the TB_DatosGenerales table

The table of general data for clusters is similar to the table of general data in collective policies, the only difference is the **TipoPoliza** field which in the case of clusters its data type is alphanumeric and it only accepts the following values (words in spanish):

- Agrupada (grouped)
- Independiente (independent)
- Semiagrupada (semi-grouped)

GENERAL DATA FOR PORTFOLIOS OF CLUSTERS

Group	No.	Field	Data Type	Values	Required
				Table TB_DatosGenerales	
General	1	ID_Contrato	Alphanumeric		Compulsory
	2	TipoPoliza	Alphanumeric	Independientes, Semiagrupada o Agrupada	Compulsory
	3	FechaInicio	Date	01/01/2010 or later	Compulsory
	4	FechaFin	Date	01/01/2011 or later	Compulsory
	5	Ramo	Alphanumeric	SISMO	Compulsory

The TB_DatosGenerales table is the main table in portfolios of clusters and it is related to other two tables TB_Cumulos and TB_Capas. It has the information of all the policies of clusters.

Contract Number as primary key (ID_Contrato)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It has the same definition as the **NumeroPoliza** field explained earlier.

Type of Policy (TipoPoliza)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

This field identifies the type of policy of clusters and is defined by using one of the following options: Agrupada, Independiente o Semiagrupada.

In the case of independent clusters (Independiente), no layers schemes are considered and the System R+® just reads the tables TB_Cumulos and TB_DatosGenerales.

Regarding both grouped and semi-grouped clusters (Agrupada and Semiagrupada), they have the same definition as the **TipoPoliza** field of collective policies which was explained earlier.

Inception Date of a collective policy (FechaInicio)
Expiration Date of a colletive policy(FechaFin)

Required: **compulsory**
Format: date (it is country dependant)
Peril: Earthquake

They both have the same definitions as the **FECHA_INICIO** and **FECHA_FIN** fields which were explained earlier.

Peril (RAMO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It has the same definition as the **Peril** field which was explained in the TB_Incisisos table description.

3.3 Definition of layers in the TB_Capas table

The table of layers for clusters has the same structure as the table of layers for collective policies. This table is used to enter all the financial data for the layers schemes.

FINANCIAL DATA FOR PORTFOLIOS OF CLUSTERS WITH LAYERS

Table TB_Capas					
Group	**No.**	**Field**	**Data Type**	**Values**	**Required**
Financial	1	ID_Contrato	Alphanumeric		Compulsory
	2	NumeroCapa	Alphanumeric		Compulsory
	3	Retencion	Percentage	0 to 100	Compulsory
	4	LimiteMaximo	Currency	0 to billions	Compulsory
	5	Coaseguro	Porcentage	0 to 10'	Compulsory

Contract Number (ID_Contrato)
Required: **compulsory**
Format: alphanumeric

It has the same definition as the **NumeroPoliza** field which was previously described in the collective policies section.

Number Layer (NumeroCapa)
Required: **compulsory**
Format: alphanumeric

It has the same definition as the **NumeroCapa** field which was defined earilier in the collective policies section.

Retention Percentage per layer (Retencion)
Required: **compulsory**
Format: 10 to 100 [per cent]

It has the same definition as the **Retencion** field which was described previously in the collective policies section.

Limit of the layer (LimiteMaximo)
Required: **compulsory**
Format: number [currency]

It has the same definition as the **LimiteMaximo** field which <u>was described earlier</u> in the collective policies section.

Coinsurance of the layer (Coaseguro)
Required: **compulsory**
Format: 0 to 100 [per cent]

It has the same definition as the **Coaseguro** field which <u>was described previously</u> in the collective policies section.

4. Data definition for Non Evaluable Risks Portfolios

This type of portfolio is only used in Mexico. The data of this portfolio is entered in the System R+® by using a database file in Microsoft Access®. The database comprises just one table named TB_RiesgosNoValuables whose structure is explained below:

DATA FOR PORTFOLIOS OF NON EVALUABLE RISKS

Table TB_RiesgosNoValuables					
Group	**No.**	**Field**	**Data Type**	**Range of Values**	**Required**
Reference	1	NUM_REGISTRO	Integer	1 to 3,000,000	Compulsory
	2	NUM_POLIZA	Alphanumeric		Compulsory
	3	TIPO_RIESGO	Integer	1 to 5	Compulsory
	4	DESCRIPCION	Integer	1 to 19	Compulsory
Financial	5	FECHA_INICIO	Date	01/01/1900 to 12/31/2080	Compulsory
	6	FECHA_FIN	Date	01/01/1900 to 12/31//2080	Compulsory
	7	SUMA_ASEGURADA	Currency	0 to billions	Compulsory
	8	PRIMA_EMITIDA	Currency	0 to billions	Compulsory
	9	FACTOR_RETENCION	Percentage	0 to 100	Compulsory

Number of record (NUM_REGISTRO)
Required: **compulsory**
Format: integer

It is a unique and consecutive number which is given per each record of the portfolio. It is used for sorting purposes since it enables the System R+® to keep track of all the locations which make up the portfolio. This field is really useful when it comes to identifying to which locations the errors and warnings, detected by the System R+®, are detected.

Policy Number (NUM_POLIZA)
Required: **compulsory**
Format: alphanumeric

It refers to the code used to identify each record or policy.

Type of Risk(TIPO_RIESGO)
Required: **compulsory**
Format: integer [1 to 5]

It refers to the code used to define the types of policies covering non evaluable risks according to the   provisions 7.2.4 and 7.2.5 in Chapter 7.2 "DE LAS BASES TÉCNICAS PARA LA VALUACIÓN DE LA RESERVA DE RIESGOS EN CURSO Y DE LA PÉRDIDA MÁXIMA PROBABLE DE LOS SEGUROS DE TERREMOTO" from the Amending Circular of Insurance by the National Commission of Insurance and Bonds in Mexico.

DESCRIPTION OF NON EVALUABLE RISKS

Code	Risk Description	Provision	Fraction
1	Policies covering risks of reinsurance taken from insurers abroad.	7.2.4.	I.
2	Policies covering risks on assets located abroad	7.2.4.	II.
3	Policies covering assets located in national territory which do not comply with regular construction characteristics which are needed so that they are evaluated by using the technical bases of Appendix 7.2.1	7.2.4.	III.
4	Policies which have all the information on the assets insured but are covered by Earthquake Insurance under special conditions and because of this they cannot be evaluated by using the technical bases of Appendix 7.2.1	7.2.4.	IV.
5	Policies covering assets in national territory which are insured by taking into account conditions which do not provide the minimum necessary information to properly apply the technical bases of Appendix 7.2.1	7.2.5.	

Description (DESCRIPCION)
Required: **compulsory**
Format: integer [1 to 19]

It refers to the code used to identify the type of non evaluable risk. The codes and their descriptions are specified in the table below:

CATALOG OF NON EVALUABLE RISK

Code	Description
1	Airports
2	Natural Gas Systems
3	Buried Pipelines
4	Systems of Oil and Petrochemical Facilities
5	Electrical Systems
6	Drainage Systems (residual water)
7	Dams
8	Treatment Plants
9	Purification Plants
10	Drinking Water Supply Systems
11	Ports
12	Railway Lines
13	Bridges
14	Highways
15	Churches
16	Historic Buildings
17	Industrial Parks
18	Theaters and Auditoriums
19	Other

Inception Date (FECHA_INICIO)
Expiration Date (FECHA_FIN)

Required: **compulsory**
Format: date (it is country dependant)

They both have the same definitions as the **FECHA_INICIO** and **FECHA_FIN** fields which were explained earlier.

Value of the sum insured (SUMA_ASEGURADA)
Required: **compulsory**
Format: number [currency]

It is the sum insured stated on the title page of the policy.

Premium issued (PRIMA_EMITIDA)
Required: **compulsory**
Format: number [currency]

It is the premium issued for each record in the database.

Note: in the case of policies whose type of risk is code 5, it will be necessary to enter the risk premium issued.

Retention Factor (FACTOR_RETENCION)
Required: **compulsory**
Format: 0 to 100 [per cent]

It is the percentage which represents the liability of the insurance company once the part of the obligations ceded in proportional reinsurance contracts has been discounted with respect to the total obligation signed in an insurance contract.

5. Data definition for Portfolios of Microinsurance (only Mexico)

This section defines the structure of portfolios for microinsurance. This type of portfolio is only used in Mexico for Earthquake insurance. The database comprises three tables: TB_Microseguros, TB_Capas and TB_DatosGenerales which are described below.

5.1 The TB_Microseguros table

This table is used for entering the aggregate values per zones and comprises the fields shown in the following table:

MICROINSURANCE INFORMATION

Group	No.	Field	Data Type	Values	Required
Reference	1	NUM_NEGOCIO	Alphanumeric		Compulsory
	2	RAMO	Alphanumeric	SISMO	Compulsory
Financial	4	FECHA_INICIO	Date	01/01/1900 -12/31/2080	Optional
	5	FECHA_FIN	Date	01/01/1900 -12/31/2080	Optional
	4	VALOR_ASEGURABLE	Currency	0 to billions	Optional
	5	LIMITE_MAXIMO	Currency	0 to billions	Compulsory
	6	NIVEL_MARGINAICON	Currency	0 to billions	Optional
Location	9	CLAVE_PAIS	Integer	52	Compulsory
	10	ZONA_AGRUPACION	Alphanumeric		Compulsory

Business number (NUM_NEGOCIO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It refers to the code used to identify the policy which this record is related to. The policy is defined in the TB_DatosGenerales table.

Peril (RAMO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It has the same definition as the **Peril** field which was explained in the TB_Incisisos table description.

Inception Date (FECHA_INICIO)
Expiration Date (FECHA_FIN)

Required: **compulsory**
Format: date (it is country dependant)
Peril: Earthquake

They both have the same definitions as the **FECHA_INICIO** and **FECHA_FIN** fields which were explained earlier.

Insurable value of the asset (INM_VALOR_ASEGURABLE)
Required: **compulsory**
Format: number [currency]
Peril: Earthquake

This field refers to the replacement cost of the asset or building.

Maximum limit of the business (LIMITE_MAXIMO)
Required: **compulsory**
Format: number [currency]
Peril: Earthquake

It refers to the maximum value which the insurance company has to pay in the coverages of buildings, contents, consequential losses and assets under express agreement according to what was foreseen in the insurance contract.

Level of marginalization (NIVEL_MARGINACION)
Required: **compulsory**
Format: number [currency]
Peril: Earthquake

Country Code (CLAVE_PAIS)
Required: **compulsory**
Format: integer
Peril: Earthquake

The description of this field is the same as the one explained in the TB_Incisos section.

Grouping Zone (ZONA_AGRUPACION)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It is the grouping zone in which each asset is located. Grouping zones are defined depending on the country. For further information on the grouping zones, refer to the Grouping Zones Catalog.

5.2 General data definition of microinsurance in the TB_DatosGenerales table

The table of general data of microinsurance is similar to the table of general data in collective policies, the only difference is the **Tipo** field, which in the case of microinsurance, its data type is alphanumeric and it only accepts the following values (words in spanish):

- Agrupada (grouped)
- Independiente (independent)
- Semiagrupada (semi-grouped)

GENERAL DATA FOR PORTFOLIOS OF MICROINSURANCE

Table TB_DatosGenerales					
Group	**No.**	**Field**	**Data Type**	**Valores**	**Required**
General	1	NUM_NEGOCIO	Alphanumeric		Compulsory
	2	Tipo	Alphanumeric	Independiente, Semiagrupada, Agrupada	Compulsory
	3	FechaInicio	Date	01/01/2010 or later	Compulsory
	4	FechaFin	Date	01/01/2011 or later	Compulsory
	5	Ramo	Alphanumeric	SISMO	Compulsory
	6	CLAVE_PAIS	Integer	52	Compulsory

TB_DatosGenerales is the main table in portfolios of microinsurance and is related to the other two tables (TB_Microseguros and TB_Capas) by means of a primary key (NUM_NEGOCIO). It used to enter general information about all the policies which make up the portfolio.

Business number (NUM_NEGOCIO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It is a code used to identify each policy of the portfolio. Given that it is defined as a primary key, it must not be repeated. All the records in the tables TB_Microseguros and TB_Capas having the same code belong to this policy.

Type of policy (Tipo)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

This field identifies the type of policy of microinsurace and is defined by using just one of the following options: Agrupada, Independiente o Semiagrupada.

In the case of independent policies (Independiente), no layers schemes are considered and the System R+®just reads the tables TB_Cumulos and TB_DatosGenerales.

Regarding both grouped and semi-grouped policies (Agrupada and Semiagrupada respectively), they have the same definition as the **TipoPoliza** field of collective policies which was explained earlier.

Inception Date (FechaInicio)
Expiration Date (FechaFin)

Required: **compulsory**
Format: date (it is country dependant)
Peril: Earthquake

They both have the same definitions as the **FECHA_INICIO** and **FECHA_FIN** fields which were explained earlier.

Peril (RAMO)
Required: **compulsory**
Format: alphanumeric
Peril: Earthquake

It has the same definition as the **Peril** field which was explained in the TB_Incisisos table description.

Country Code (CLAVE_PAIS)
Required: **compulsory**
Format: integer
Peril: Earthquake

The description of this field is the same as the one explained in the TB_Incisos section.

5.3 Definition of layers in the TB_Capas table

The table of layers for microinsurance has the same structure as the table of layers for collective policies. This table is used to enter all the financial data for the layers schemes.

FINANCIAL DATA FOR PORTFOLIOS OF MICROINSURANCE WITH LAYERS

Table TB_Capas					
Group	**No.**	**Field**	**Data Type**	**Values**	**Required**
Financial	1	NUM_NEGOCIO	Alphanumeric		Compulsory
	2	NumeroCapa	Alphanumeric		Optional
	3	Retención	Percentage	0 to 100	Compulsory
	4	LimiteMaximo	Currency	0 to billions	Compulsory
	5	Coaseguro	Percentage	0 to 100	Compulsory

Business Number (NUM_NEGOCIO)
Required: **compulsory**
Format: alphanumeric

It refers to the code used to identify the policy which this record is related to. The policy is defined in the TB_DatosGenerales table.

Layer Number (NumeroCapa)
Required: **optional**
Format: alphanumeric

It is a code used to identify the layer number of the policy. It is alphanumeric and it is recommended to enter the word "**Capa**" followed by the number of the layer that corresponds.

Layers generally start from the layer one which is denoted as "**Capa1**" but in the case of grouped polices the first layer is always used to enter the **Deductible** value as shown here.

Retention Percentage per layer (Retencion)
Required: **compulsory**
Format: 10 to 100 [per cent]

It has the same definition as the **Retencion** field which was described previously in the collective policies section.

Limit of the layer (LimiteMaximo)
Required: **compulsory**
Format: number [currency]

It has the same definition as the **LimiteMaximo** field which was described earlier in the collective policies section.

Coinsurance of the layer (Coaseguro)
Required: **compulsory**
Format: 0 to 100 [per cent]

It has the same definition as the **Coaseguro** field which was described previously in the collective policies section.