

# Magic: The Gathering Database Documentation

John Kuroda  
Akil Marshall  
Israel Trusdell

March 23, 2020

# Contents

<b>1</b>	<b>Philosophy of Design</b>	<b>3</b>
<b>2</b>	<b>Tables</b>	<b>3</b>
2.1	CARD . . . . .	3
2.2	SET . . . . .	4
2.3	FORMAT . . . . .	5
2.4	CONTAINS . . . . .	6
2.5	LIMITATION . . . . .	6
2.6	COLOR . . . . .	7
2.7	COLOR.COST . . . . .	7
2.8	SUPERTYPE . . . . .	8
2.9	TYPE . . . . .	8
2.10	SUBTYPE . . . . .	9
2.11	COLOR.IDENTITY . . . . .	9
<b>3</b>	<b>Domain Descriptions of Certain Attributes</b>	<b>10</b>
3.1	SET.set_type . . . . .	10
3.2	CONTAINS.rarity . . . . .	11
3.3	COLOR.color . . . . .	11
3.4	LIMITATION.limitation_type . . . . .	11

# 1 Philosophy of Design

write something about why we did the things we did.

## 2 Tables

### 2.1 CARD

The MTG wiki had the following to say about what a card is.

In Magic: The Gathering, a card is the standard component of the game. The word card usually refers to a Magic card with a Magic card front and a Magic card back, or to double-faced cards.

The CARD table is reflective of the elements you will find on a magic card.

#### 2.1.1 Attributes

- card\_name
  - **description:** The name of the card.
  - **data type:** String
  - **domain:** Any valid card name.
- text
  - **description:** Everything in the text area of the card.
  - **data type:** String
  - **domain:** Any valid card text.
- type
  - **description:** The type of the card (creature, artifact, etc).
  - **data type:** String
  - **domain:** Any valid magic card type.
- power
  - **description:** The card's power.
  - **data type:** Integer
  - **domain:** Any non-negative integer.
- toughness
  - **description:** The card's toughness.
  - **data type:** Integer

- **domain:** Any non-negative integer.
- loyalty
  - **description:** The card’s loyalty.
  - **data type:** Integer
  - **domain:** Any non-negative integer.

## 2.2 SET

The MTG wiki had the following to say about what a set is.

A set in Magic: The Gathering is a pool of cards released together and designed for the same play environment. Cards in a set can be obtained either randomly through booster packs, or in box sets that have a fixed selection of cards. An expansion symbol and, more recently, a three-character abbreviation is printed on each card to identify the set it belongs to.

### 2.2.1 Attributes

- set\_code
  - **description:** The alphanumeric code associated with a set.
  - **data type:** String
  - **domain:** Combinations of letters and digits.
- set\_name
  - **description:** The name of the set.
  - **data type:** String
  - **domain:** Any valid set name.
- release\_date
  - **description:** The date the set was released.
  - **data type:** String
  - **domain:** Any valid date.
- set\_type
  - **description:** The type of set it is (core, expansion, etc).
  - **data type:** String
  - **domain:** Any valid set type.

## 2.3 FORMAT

The MTG wiki had the following to say about what a format is.

Formats are different modes in which the Magic: The Gathering collectible card game can be played. Each format provides rules for deck construction and gameplay.

### 2.3.1 Attributes

- `format_name`
  - **description:** The name of the format.
  - **data type:** String
  - **domain:** Any valid format name.
- `min_deck_size`
  - **description:** The minimum number of cards allowed in a deck.
  - **data type:** Integer
  - **domain:** Any non-negative integer.
- `max_deck_size`
  - **description:** The maximum number of cards allowed in a deck.
  - **data type:** Integer.
  - **domain:** Any integer, negative integers are interpreted as infinity.
- `copies_allowed`
  - **description:** The maximum number of copies of a card allowed in a deck.
  - **data type:** Integer
  - **domain:** Any non-negative integer.
- `format_type`
  - **description:** The type of the format (constructed, draft, etc)
  - **data type:** String
  - **domain:** Valid magic format types.
- `multiplayer`
  - **description:** If the format can be played by more than 2 people.
  - **data type:** Boolean
  - **domain:** Any valid boolean.

## 2.4 CONTAINS

This table is the implementation of the many-to-many relationship between CARD and SET. A card may be included in many sets and A set may contain many cards.

### 2.4.1 Attributes

- set\_code
  - **description:** A foreign key from SET.
  - **data type:** String
  - **domain:** Combinations of letters and digits.
- card\_name
  - **description:** A foreign key from CARD.
  - **data type:** String
  - **domain:** Any valid card name.
- rarity
  - **description:** The rarity of the card (common, uncommon, etc).
  - **data type:** String
  - **domain:** Any valid magic card rarity.

## 2.5 LIMITATION

This table is the implementation of the many-to-many relationship between FORMAT and CARD. A format may limit many cards and a card may be limited by many formats.

### 2.5.1 Attributes

- format\_name
  - **description:** A foreign key from FORMAT.
  - **data type:** String
  - **domain:** Any valid format name.
- card\_name
  - **description:** A foreign key from CARD.
  - **data type:** String
  - **domain:** Any valid card name.

- `limitation_type`
  - **description:** The way in which a card is limited (banned, restricted, etc).
  - **data type:** String
  - **domain:** Any valid limitation.

## 2.6 COLOR

MTG wiki had the following to say about color.

Color is a basic property of cards in Magic: The Gathering, forming the core of the game’s mana system and overall strategy.

### 2.6.1 Attributes

- `card_name`
  - **description:** A foreign key from CARD.
  - **data type:** String
  - **domain:** Any valid card name.
- `color`
  - **description:** The color a card is associated with, usually indicated by the physical color of the card.
  - **data type:** String
  - **domain:** Any valid magic card color.

## 2.7 COLOR\_COST

Due to the fact that `converted_cost` depends on `cost_string` which is not the primary key. This table solves that problem.

### 2.7.1 Attributes

- `card_name`
  - **description:** A foreign key from CARD.
  - **data type:** String
  - **domain:** Any valid card name.
- `cost_string`
  - **description:** An alphanumeric representation of a cards mana cost.
  - **data type:** String

- **domain:** Strings over the alphabet  $\Sigma = \{R, U, G, B, W, X, \phi\}$  where  $\phi \in \mathbb{Z}_{>0}$  and each string that contains  $\phi$  begins with  $\phi$ .
- `converted_cost`
  - **description:** The sum over a cards mana cost. Each occurrence of

Table 1: How to sum a `cost_string`.

$\Sigma$	value
<i>R</i>	1
<i>U</i>	1
<i>G</i>	1
<i>B</i>	1
<i>W</i>	1
<i>X</i>	0
$\phi$	$\phi$

a character in a `cost_string` is summed according to the above table.

- **data type:** Integer
- **domain:** Any non-negative integer.

## 2.8 SUPERTYPE

Magic cards may have one or more supertypes, this table implements that one-to-many relationship.

### 2.8.1 Attributes

- `card_name`
  - **description:** A foreign key from `CARD`.
  - **data type:** String
  - **domain:** Any valid card name.
- `supertype`
  - **description:** The supertype of the card (legendary, snow, etc).
  - **data type:** String
  - **domain:** Any valid magic card subtype.

## 2.9 TYPE

Magic cards may have one or more types, this table implements that one-to-many relationship.



### 2.9.1 Attributes

- card\_name
  - **description:** A foreign key from CARD.
  - **data type:** String
  - **domain:** Any valid card name.
- type
  - **description:** The type of the card (creature, artifact, etc).
  - **data type:** String
  - **domain:** Any valid magic card type.

## 2.10 SUBTYPE

Magic cards may have zero or more subtypes, this table implements that one-to-many relationship.

### 2.10.1 Attributes

- card\_name
  - **description:** A foreign key from CARD.
  - **data type:** String
  - **domain:** Any valid card name.
- subtype
  - **description:** The subtype of the card (equipment, curse, etc).
  - **data type:** String
  - **domain:** Any valid magic card subtype.

## 2.11 COLOR\_IDENTITY

Each mana symbol that appears on a card is included within that cards color identity. Each card is associated with one or more colors.

### 2.11.1 Attributes

- card\_name
  - **description:** A foreign key from CARD.
  - **data type:** String
  - **domain:** Any valid card name.

- red
  - **description:** A flag to indicate the cards alignment with red.
  - **data type:** Boolean
  - **domain:** Any valid boolean.
- blue
  - **description:** A flag to indicate the cards alignment with blue.
  - **data type:** Boolean
  - **domain:** Any valid boolean.
- green
  - **description:** A flag to indicate the cards alignment with green.
  - **data type:** Boolean
  - **domain:** Any valid boolean.
- white
  - **description:** A flag to indicate the cards alignment with white.
  - **data type:** Boolean
  - **domain:** Any valid boolean.
- black
  - **description:** A flag to indicate the cards alignment with black.
  - **data type:** Boolean
  - **domain:** Any valid boolean.

## 3 Domain Descriptions of Certain Attributes

In this section we describe in detail and give examples of the attributes domain for those attributes that we can reasonably do so.

### 3.1 SET.set\_type

#### 3.1.1 Domain Values

- |             |                    |               |
|-------------|--------------------|---------------|
| • archenemy | • draft_innovation | • funny       |
| • box       | • duel_deck        | • masterpiece |
| • commander | • expansion        | • masters     |
| • core      | • from_the_vault   | • memorabilia |

- planechase
- premium\_deck
- promo
- spellbook
- starter
- token
- treasure\_chest

## 3.2 CONTAINS.rarity

### 3.2.1 Domain Values

- common
- uncommon
- rare
- mythic

## 3.3 COLOR.color

### 3.3.1 Domain Values

- black
- blue
- colorless
- green
- red
- white

3

## 3.4 LIMITATION.limitation\_type

### 3.4.1 Domain Values

- none
- restricted
- banned

3