

# Magic: The Gathering Database Documentation

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# 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.
- supertype
  - **description:** The super type of the card (legendary, snow, etc).
  - **data type:** String
  - **domain:** Any valid magic card supertype.
- 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.
- year
  - **description:** The year the set was released.
  - **data type:** Integer
  - **domain:** Any valid year.
- 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.

## 2.4 IS\_ALLOWED

This table is the implementation of the many-to-many relationship between FORMAT and SET. A format may allow many sets and a set may be included in many formats.

### 2.4.1 Attributes

- `set_code`
  - **description:** A foreign key from SET.
  - **data type:** String
  - **domain:** Combinations of letters and digits.
- `format_name`
  - **description:** A foreign key from FORMAT.
  - **data type:** String
  - **domain:** Any valid format name.

## 2.5 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.

### 2.5.1 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.

## 2.6 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.

### 2.6.1 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.

## 2.7 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.

### 2.7.1 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.

## 2.8 COLOR\_COST

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

### 2.8.1 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
$R$	1
$U$	1
$G$	1
$B$	1
$W$	1
$X$	0
$\phi$	$\phi$

a character in a cost\_string is summed according to the above table.

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

## 2.9 DOUBLE\_CARD

This table allows us to describe double faced cards which are magic cards with two faces.

### 2.9.1 Attributes

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



- side\_b
  - **description:** A foreign key from CARD, specifically a card\_name.
  - **data type:** String
  - **domain:** Any valid card name.
- set\_code
  - **description:** A foreign key from SET.
  - **data type:** String
  - **domain:** Combinations of letters and digits.

## 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.
- colorless
  - **description:** A flag to indicate the cards alignment with colorless.
  - **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.