

Magento 2 Product Search Mechanism – Detailed Documentation

This document explains how Magento 2 performs product search internally, along with **all database tables** involved in the search process.

1. Overview: How Magento Search Works

Magento 2 search works in 3 major steps:

Step 1: Indexing Searchable Product Data

Magento collects all searchable information (product name, SKU, attributes, categories, descriptions) and stores it inside special **fulltext index tables**.

Step 2: Search Engine Query Execution

Magento sends the search keyword to a search engine: - Elasticsearch (Magento 2.4+) - OpenSearch - MySQL Fulltext (old versions)

The engine runs text-matching logic and returns product IDs.

Step 3: Relevance Ranking & Result Display

Magento ranks results by relevance score, attribute weights, partial matches, and returns final product listing.

2. Internal Search Flow Explained

User Searches: “Red Shoes”

1. Magento receives the keyword.
 2. Keyword is split: **Red** and **Shoes**.
 3. Magento queries **full-text index tables**.
 4. Search engine ranks matched products.
 5. Magento filters: visibility + in-stock + enabled.
 6. Final result delivered to storefront.
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3. Database Tables Used in Magento Product Search

Below is a complete list of **all tables involved directly or indirectly** in Magento's search mechanism.

A. MAIN SEARCH INDEX TABLES (MOST IMPORTANT)

1. `catalogsearch_fulltext_scope1`
 - Main fulltext search table
 - Stores combined searchable text for each product
 - Contains product ID + search terms data
 2. `catalogsearch_fulltext_scopeX`
 - One table per store view
 3. `search_query`
 - Stores previous user searches
 - Helps autocomplete and suggestion
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B. PRODUCT ENTITY & ATTRIBUTE TABLES

These tables supply data to search index.

Product Master Table

- `catalog_product_entity`

EAV Attribute Data Tables

- `catalog_product_entity_varchar` (name, url_key, small text)
- `catalog_product_entity_text` (description)
- `catalog_product_entity_int` (status, visibility, dropdown attributes)
- `catalog_product_entity_decimal` (price, weight)
- `catalog_product_entity_datetime` (dates)

These tables provide attribute values that are merged into fulltext index.

C. CATEGORY RELATION TABLES

Search also checks category assignments.

- `catalog_category_product` (product assigned to category)
 - `catalog_category_entity_varchar` (category name)
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D. INVENTORY / STOCK TABLES

Search results include **in-stock + visible** products.

Legacy Inventory Tables:

- `cataloginventory_stock_item`
- `cataloginventory_stock_status`

MSI (Multi-Source Inventory) Tables:

- `inventory_source`
 - `inventory_source_item`
 - `inventory_stock_*`
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E. PRODUCT INDEX TABLES

Magento checks final visibility, pricing, configuration via indexes.

Usage in search:

- `catalog_product_index_price` (price filtering)
 - `catalog_product_index_eav` (attribute filtering)
 - `catalog_product_index_visibility` (visible products)
 - `catalog_product_index_website` (assigned website)
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F. URL REWRITE TABLES

After product is found, search results show URLs from: - `url_rewrite`

G. CONFIGURABLE / VARIANT PRODUCT TABLES

Magento ensures parent configurable shows in results.

- catalog_product_super_link
- catalog_product_super_attribute

4. Search Ranking Factors

Magento ranks results based on: - Keyword match in name - Match in description - Attribute search weight - Partial keyword match - SKU match

Admin setting for weight:

Stores → Attributes → Product → Storefront Properties → Search Weight

5. Full Search Flow Diagram (Text Version)



6. Summary of All Tables Used in Magento Search

✓ Fulltext Search Tables

- catalogsearch_fulltext_scope1
- catalogsearch_fulltext_scopeX
- search_query

✓ Product EAV Tables

- catalog_product_entity
- catalog_product_entity_varchar
- catalog_product_entity_text
- catalog_product_entity_int
- catalog_product_entity_decimal
- catalog_product_entity_datetime

✓ Category Tables

- catalog_category_product
- catalog_category_entity_varchar

✓ Inventory Tables

- cataloginventory_stock_item
- cataloginventory_stock_status
- inventory_source
- inventory_source_item
- inventory_stock_*

✓ Product Index Tables

- catalog_product_index_price
- catalog_product_index_eav
- catalog_product_index_visibility
- catalog_product_index_website

✓ Configurable Product Tables

- catalog_product_super_link
- catalog_product_super_attribute

✓ URL Table

- url_rewrite

If you want, I can also create a **diagram image**, **flowchart**, or **PDF export** of this document.