

Excel: Formula for Minimum IF Multiple Criteria

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In the dynamic environment of [Microsoft Excel](#), the necessity of extracting specific values from expansive [datasets](#) is fundamental to effective [data analysis](#). While simple operations like finding the overall minimum value in a given area are straightforward, analytical complexity escalates when the minimum must be determined based on several concurrent conditions. This advanced capability moves beyond basic aggregation, enabling users to perform highly relevant conditional analysis. Fortunately, Excel provides a robust [function](#) designed precisely for this task: the [MINIFS function](#).

The MINIFS function is an indispensable tool for conditional data aggregation, allowing you to calculate the lowest numerical value within a designated [range](#) where one or more specified [criteria](#) are met. This is particularly valuable in scenarios such as financial modeling, logistics planning, or inventory management, where decisions are often contingent upon multiple interlocking factors. A thorough understanding of its [syntax](#) and correct application is paramount for enhancing data manipulation proficiency and streamlining calculations that involve complex conditional logic.

At its essence, MINIFS works by allowing you to define the [range](#) of values to be evaluated for the minimum, alongside corresponding ranges that contain the filtering conditions. This mechanism ensures that only data points that satisfy every defined condition are included in the minimum calculation, yielding a precise and filtered outcome. We will now explore the fundamental [syntax](#) of this tool and walk through a detailed, practical example to illustrate its powerful utility in a real-world context.

Understanding the MINIFS Function Syntax

The MINIFS function is meticulously structured to handle multiple conditions simultaneously, making it a critical component for advanced analysis in Excel. Its [syntax](#) is both intuitive and highly flexible, accommodating various data types and complex logical requirements. The core structure requires defining the target [range](#) where the minimum value resides, followed by sequential pairs of conditional ranges and their corresponding criteria. This design facilitates efficient filtering of large amounts of data based on precise rules.

The general form of the MINIFS function adheres to the following structure:

```
=MINIFS(min_range, criteria_range1, criteria1, , ...)
```

Here, the **min_range** is the mandatory first [argument](#), referring to the collection of [cells](#) that contain the numerical values from which the minimum result will be calculated. This is the primary data source for the result. The subsequent [arguments](#), **criteria_range1** and **criteria1**, constitute the initial conditional pair. **criteria_range1** specifies the column of data to be tested, and **criteria1** defines the specific condition (e.g., a specific text string or a numerical threshold) that must be satisfied for the corresponding value in the **min_range** to be considered.

The true strength of MINIFS lies in its capacity for extension. It allows users to chain additional pairs of criteria ranges and criteria, enabling highly specific filtering. Modern versions of Excel permit up to 127 such pairs, granting immense power for constructing complex filters. Each subsequent pair, such as **criteria_range2** and **criteria2**, further refines the selection process. A value is only included in the minimum calculation if it simultaneously satisfies **all** defined conditions across every criterion pair. This flexibility makes MINIFS exceptionally powerful for complex data analysis tasks requiring multi-conditional evaluation.

Deconstructing the MINIFS Arguments

To properly leverage the MINIFS function, it is vital to have a detailed understanding of each of its [arguments](#). The **min_range** is the central set of [cells](#) where Excel searches for the minimum number. This [range](#) must contain numerical data; Excel automatically ignores any text, logical values, or empty [cells](#) encountered during the minimum calculation. For instance, if the objective is to find the lowest transaction value, the **min_range** would encompass all transaction figures.

Following the target range, you define one or more pairs consisting of a **criteria_range** and its associated **criteria**. The **criteria_range** is the area of the spreadsheet against which a condition is tested. A critical requirement is that every **criteria_range** must maintain the same dimensional alignment--the exact same number of rows and columns--as the **min_range**, regardless of their position on the spreadsheet. The **criteria** itself can be expressed as a number, a mathematical expression, a [cell](#) reference, or text. For example, to filter data specific to a product category, the **criteria_range** would hold the category names, and the **criteria** might be specified as "Electronics".

Precision in defining criteria is achieved through the use of comparison operators. For numerical criteria, standard operators such as equals (=), greater than (>), less than (<), and their combined forms (>=, <=, <> for not equal) must be enclosed in double quotation marks when combined with the number, such as "<10" or ">=500". Text criteria, conversely, are simply placed within double quotation marks (e.g., "Marketing"). Furthermore, wildcard characters, including the asterisk (*) for matching any sequence of characters or the question mark (?) for any single character, offer powerful flexibility in creating dynamic text-matching patterns. This level of detail in argument definition ensures highly targeted and reliable extraction of the minimum value.

A Practical Example: Finding Minimum Points for Specific Teams and Assists

To demonstrate the practical application of the MINIFS function, let us analyze a common scenario involving sports statistics. Imagine you are working with a [dataset](#) in Excel containing performance metrics for basketball players, including columns tracking the player's Team, Assists, and Points scored. Your analytical goal is to find the minimum points scored by a player, subject to two

specific and simultaneous conditions related to their team affiliation and their assist count.

Specifically, the requirement is to identify the lowest score recorded by players who belong to the team "Mavs" **AND who have registered fewer than 5 assists in the recorded period. This multi-conditional query cannot be solved using the standard [MIN](#) function, as it necessitates evaluating two distinct criteria at once. The MINIFS function is perfectly engineered to manage such requirements, providing a precise answer to this complex analytical question.**

We will utilize the following sample data structure, which represents a simplified collection of player statistics. This table provides a clear visual context for the problem and will serve as the foundation for our Excel formula application. Our objective is to isolate the minimum points value that successfully satisfies both the team and assist conditions, thereby illustrating the efficiency of MINIFS in filtering and aggregating data based on multiple rules.

	A	B	C	D	E
1	Team	Assists	Points		
2	Mavs	4	22		
3	Mavs	7	18		
4	Mavs	8	25		
5	Mavs	3	30		
6	Spurs	10	13		
7	Spurs	12	29		
8	Spurs	8	25		
9	Spurs	4	20		
10	Rockets	3	13		
11	Rockets	6	39		
12					
13					
14					
15					
16					
17					

As shown in the image above, our [dataset](#) is structured with "Team" in column A, "Assists" in column B, and "Points" in column C. To solve our goal of finding the minimum points for "Mavs" players with less than 5 assists, we must accurately reference these columns within our MINIFS function. The clear organization of the data in the spreadsheet facilitates the easy definition of the ranges for our filtering criteria and the range from which we intend to extract the minimum value.

Step-by-Step Implementation in Excel

With a clear objective and our sample data prepared, we can now proceed with the exact implementation of the MINIFS function in Excel. Our goal is to locate the minimum value in the 'Points' column (C2:C11) only if the corresponding entry in the 'Team' column (A2:A11) equals "Mavs" and the entry in the 'Assists' column (B2:B11) is less than 5. This requires the careful construction of the function's [arguments](#) to ensure accurate conditional matching.

The formula necessary to achieve this calculation is structured as follows:

=MINIFS(C2:C11, A2:A11, "Mavs", B2:B11, "<5")

Let us analyze the role of each component within this formula:

C2:C11: This serves as the **min_range**. It specifies the numerical [range](#) where the minimum value will be sought, corresponding to the 'Points' data.

A2:A11: This is the first **criteria_range**, referencing the 'Team' column, which will be evaluated against our first condition.

"Mavs": This is **criteria1**. It directs Excel to only consider rows where the value in the 'Team' column matches the text "Mavs". Text criteria must always be enclosed in double quotation marks.

B2:B11: This is the second **criteria_range**, which corresponds to the 'Assists' column.

"<5": This is **criteria2**. It instructs Excel to include only rows where the value in the 'Assists' column is less than 5. Numerical criteria that utilize operators also require double quotation marks for proper parsing.

To execute this function, simply enter the complete formula into an empty [cell](#), such as **E2**, and press the **Enter** key. Excel will process the formula, apply all stipulated criteria, and instantly display the calculated minimum value in the designated output [cell](#). This straightforward application ensures that complex conditional calculations are both accessible and highly efficient.

E2 ✕ ✓ <i>fx</i> =MINIFS(C2:C11, A2:A11, "Mavs", B2:B11, "<5")					
	A	B	C	D	E
1	Team	Assists	Points		Min Points if Team="Mavs" and Assists<5
2	Mavs	4	22		22
3	Mavs	7	18		
4	Mavs	8	25		
5	Mavs	3	30		
6	Spurs	10	13		
7	Spurs	12	29		
8	Spurs	8	25		
9	Spurs	4	20		
10	Rockets	3	13		
11	Rockets	6	39		
12					
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18					

As clearly illustrated in the image above, upon entering the formula into [cell E2](#), Excel returns the result. The computed output is **22**. This value represents the minimum number of points scored among all players who are members of the "Mavs" team AND have fewer than 5 assists. This immediate feedback facilitates rapid verification and subsequent data analysis.

Interpreting the Results and Verification

The result of **22** returned by our MINIFS function is a precise analytical outcome derived from applying a specific set of conditions to the source data. This value signifies the absolute lowest point total achieved by any player who successfully met both required criteria: belonging to the "Mavs" team and having an assist count below 5. Interpreting this result accurately is essential for sound data analysis and for making informed, data-driven decisions based on the insights gleaned from your spreadsheet.

To fully validate the function's accuracy and deepen your comprehension of its [conditional logic](#), it is highly recommended to manually verify the result by inspecting the raw data. This process involves systematically reviewing each row to check if it satisfies all defined filtering criteria. By visually confirming which data points were considered in the minimum calculation, you can build confidence in the formula's reliability and confirm why the final output is indeed **22**.

Let us re-examine our dataset, specifically concentrating on the rows that align with both the team

and assists criteria. We are looking exclusively for records where 'Team' equals "Mavs" AND 'Assists' is less than 5. Highlighting these qualifying rows provides visual isolation of the relevant data points, thereby verifying the function's outcome against the raw source material.

E2					=MINIFS(C2:C11, A2:A11, "Mavs", B2:B11, "<5")
	A	B	C	D	E
1	Team	Assists	Points		Min Points if Team="Mavs" and Assists<5
2	Mavs	4	22		22
3	Mavs	7	18		
4	Mavs	8	25		
5	Mavs	3	30		
6	Spurs	10	13		
7	Spurs	12	29		
8	Spurs	8	25		
9	Spurs	4	20		
10	Rockets	3	13		
11	Rockets	6	39		
12					
13					
14					
15					
16					
17					

As clearly illustrated in the highlighted table, only two rows meet both specified conditions simultaneously. These are the rows where the team is "Mavs" AND the assists value is strictly less than 5. Upon examining the 'Points' column for these qualifying records, we find the values **22** and **28**. Among these two selected values, the minimum is unambiguously **22**. This manual confirmation perfectly corroborates the result provided by our MINIFS function, confirming the accuracy and reliability of this powerful Excel tool for conditional data aggregation.

Extending MINIFS with Additional Criteria

A key advantage of the MINIFS function is its inherent scalability. While our prior example utilized two criteria, the function is engineered to accommodate a much greater number, enabling highly complex and granular data filtering. Users can append additional pairs of **criteria_range** and **criteria** to further refine their search for the minimum value, supporting up to 127 pairs in recent Excel iterations. This comprehensive flexibility is invaluable when analyzing multifaceted datasets that demand that multiple, diverse conditions be satisfied concurrently.

For example, expanding on our basketball player dataset, suppose the requirement was to find the

minimum points for a "Mavs" player with less than 5 assists, **BUT only if their 'Games Played' metric exceeded 10. To integrate this third condition, one would simply attach another range and criteria pair to the existing formula. Assuming 'Games Played' data resides in column D (D2:D11), the expanded formula would be constructed as follows:**

```
=MINIFS(C2:C11, A2:A11, "Mavs", B2:B11, "<5", D2:D11, ">10")
```

This demonstrates the ease with which the function's [conditional logic](#) can be extended, making it adaptable to virtually any complex analytical scenario.

The capacity to chain multiple criteria makes MINIFS an exceedingly robust tool for sophisticated data analysis. Whether filtering by specific dates, multiple categories, varying numerical thresholds, or any combination thereof, the MINIFS function delivers the precision required to extract the exact minimum value relevant to the user's specific query. It is crucial to always ensure that each criteria range is correctly associated with its criteria and that the dimensions of all ranges align precisely with the **min_range** to prevent errors and guarantee accurate results.

Common Pitfalls and Best Practices for MINIFS

Despite the power of the MINIFS function, users occasionally encounter issues, often stemming from deviations from fundamental best practices. One of the most frequent pitfalls involves dimensional mismatch among the ranges. All **criteria_range arguments** must share the exact same number of rows and columns as the **min_range**. If these ranges are inconsistently sized, Excel may return an error value or, more dangerously, an incorrect result without providing a clear warning, which can lead to flawed data analysis. Users should meticulously check their range selections to ensure absolute dimensional consistency.

Another pervasive issue relates to the formatting of criteria, particularly when dealing with text and numerical comparisons. Text criteria, such as "Mavs", must always be encapsulated within double quotation marks. Similarly, numerical criteria that incorporate comparison operators (e.g., "<5", ">=100") must also be enclosed in quotes. Failure to adhere to this quotation requirement can result in a #NAME? error or lead to an incorrect logical evaluation. If a [cell](#) reference is used as criteria (e.g., A1), no quotes are necessary. However, if an operator is combined with a reference (e.g., to look for values greater than the content of A1), the operator requires quotes, and concatenation using the ampersand (&) must be employed (e.g., ">"&A1).

To create robust and error-free MINIFS formulas, consider adopting the following best practices:

Use Named Ranges: For complex spreadsheets, assigning named ranges (e.g., Points, Team, Assists) to your data blocks significantly improves formula readability and simplifies management, which is crucial for easier [troubleshooting](#).

Absolute References: When developing formulas intended for copying across multiple [cells](#), always use [absolute references](#) (e.g., \$C\$2:\$C\$11) for all your ranges to prevent them from

unintentionally shifting relative to the formula's position.

External Criteria Cells: Rather than hardcoding criteria directly into the formula (e.g., "Mavs"), reference the criteria from an external [cell](#) (e.g., A1 containing "Mavs"). This practice makes your formulas dynamic and simplifies updates without needing to edit the core formula structure.

Error Checking: If the formula returns an unexpected result, utilize Excel's built-in "Evaluate Formula" tool (found under the Formulas tab) to step through the calculation sequence, identifying precisely where the evaluation might be going astray.

Conclusion and Further Learning

The MINIFS function is an indispensable, high-level tool for anyone engaged in advanced data analysis within Excel. It grants users the ability to precisely extract the minimum value from a [range](#) based on multiple, simultaneous criteria, transforming simple aggregation into sophisticated conditional insight. By mastering its [syntax](#), understanding its [arguments](#), and adhering to best practices, you can unlock a new stratum of analytical power within your [spreadsheets](#). Whether managing intricate sales records, analyzing complex scientific results, or monitoring project timelines, MINIFS provides the precision required for confident, data-driven decision-making.

We have demonstrated through a practical case study how to apply MINIFS to a dataset, establishing multiple conditions to pinpoint highly specific information. The capability to extend this function with virtually any number of criteria ensures its versatility, allowing it to adapt seamlessly to the continually increasing complexity of modern data requirements. Always remember the importance of validating your results, especially when dealing with elaborate formulas, to ensure the consistent accuracy and integrity of your data analysis.

For the most comprehensive understanding of the MINIFS function and its nuances, including specific error handling and advanced usage scenarios, we strongly recommend consulting the [official Microsoft Excel documentation](#). This resource provides the most authoritative and up-to-date information directly from the developers, ensuring access to precise details for all your spreadsheet needs.

Additional Resources for Excel Proficiency

Beyond the MINIFS function, Excel offers an extensive array of functions and tools designed to enhance your data manipulation and data analysis capabilities. To further expand your expertise and address other common challenges, we encourage you to explore complementary tutorials and guides. These resources can assist in mastering various facets of Excel, ranging from fundamental operations to advanced statistical techniques, ultimately positioning you as a more proficient and efficient user of this essential spreadsheet software.

The following tutorials explain how to perform other common tasks in Excel, serving to complement

your understanding of conditional aggregations and opening the door to more complex data operations. Continuous learning and dedicated practice are key strategies for unlocking the full potential of Excel for all your analytical requirements.