

From 2011

<https://social.technet.microsoft.com/Forums/exchange/en-US/69f393aa-d555-4f8f-bb16-c636a129fc25/what-are-valid-and-invalid-email-address-characters>

What are valid and invalid email address characters

The format of email addresses is `local-part@domain` where the local-part may be up to 64 characters long and the [domain name](#) may have a maximum of 253 characters - but the maximum 256 characters length of a forward or reverse path restricts the entire email address to be no more than 254 characters.^[1] The formal definitions are in [RFC 5322](#) (sections 3.2.3 and 3.4.1) and [RFC 5321](#) - with a more readable form given in the informational [RFC 3696](#)^[2] and the [associated errata](#).

Local part

The local-part of the email address may use any of these [ASCII](#) characters [RFC 5322](#) Section 3.2.3:

- Uppercase and lowercase English letters (a–z, A–Z) (ASCII: 65-90, 97-122)
- Digits 0 to 9 (ASCII: 48-57)
- Characters !#\$%&'*+,-./=:^_`{|}~ (ASCII: 33, 35-39, 42, 43, 45, 47, 61, 63, 94-96, 123-126)
- Character . (dot, period, full stop) (ASCII: 46) provided that it is not the first or last character, and provided also that it does not appear two or more times consecutively (e.g. John..Doe@example.com is not allowed.).
- Special characters are allowed with restrictions. They are:
 - Space and " () , : ; < > @ [\] (ASCII: 32, 34, 40, 41, 44, 58, 59, 60, 62, 64, 91-93)

The restrictions for special characters are that they must only be used when contained between quotation marks, and that 3 of them (The *space*, *backslash* \ and *quotation mark* " (ASCII: 32, 92, 34)) must also be preceded by a backslash \ (e.g. "\ \\\ \"").

A quoted string may exist as a dot separated entity within the local-part, or it may exist when the outermost quotes are the outermost characters of the local-part (e.g.

`abc."defghi".xyz@example.com` OR `"abcdefghixyz"@example.com` are allowed.

Conversely, `abc"defghi"xyz@example.com` is not; neither is

`abc\"def\"ghi@example.com`). Quoted strings and characters however, are not

commonly used. [RFC 5321](#) also warns that *"a host that expects to receive mail SHOULD avoid defining mailboxes where the Local-part requires (or uses) the Quoted-string form"*.

The local-part "postmaster" is treated specially - it is case-insensitive, and should be forwarded to the server's administrator. Technically all other local-parts are case sensitive, therefore *jsmith@example.com* and *JSmith@example.com* specify different mailboxes. However most organizations treat uppercase and lowercase letters as equivalent, and also do not allow use of the technically valid characters (space, ? and ^). Organizations are free to restrict the forms of their own email addresses as desired, e.g., [Windows Live Hotmail](#), for example, only allows creation of email addresses using alphanumerics, dot (.), underscore (_) and hyphen (-).^{[\[3\]](#)}

Systems that send mail must be capable of handling outgoing mail for all valid addresses. Contrary to the relevant standards, some defective systems treat certain legitimate addresses as invalid and fail to handle mail to these addresses. Hotmail, for example, refuses to send mail to any address containing any of the following standards-permissible characters: !#\$%*/?^`{|}~

Domain part

The domain name part of an email address has to conform to strict guidelines: it must match the requirements for a [hostname](#), consisting of letters, digits, hyphens and dots. In addition, the domain part may be an [IP address](#) literal, surrounded by square braces, such as *jsmith@[192.168.2.1]*, although this is rarely seen except in [email spam](#).

Examples

Valid email addresses

- `<tt>niceandsimple@example.com</tt>`
- `<tt>a.little.unusual@example.com</tt>`
- `<tt>a.little.more.unusual@dept.example.com</tt>`
- `<tt>much."more\ unusual"@example.com</tt>`
- `<tt>very.unusual."@" .unusual.com@example.com</tt>`
- `<tt>very."(),;,<>[]".VERY."very@\\ \"very".unusual@strange.example.com</tt>`

Invalid email addresses

- `<tt>Abc.example.com</tt>` (an @ character must separate the local and domain parts)
- `<tt>Abc.@example.com</tt>` (character dot(.) is last in local part)
- `<tt>Abc..123@example.com</tt>` (character dot(.) is double)

- `<tt>A@b@c@example.com</tt>` (only one @ is allowed outside quotation marks)
- `<tt>a"b(c)d,e:f;g<h>i[j\k]l@example.com</tt>` (none of the special characters in this local part is allowed outside quotation marks)
- `<tt>just"not"right@example.com</tt>` (quoted strings must be dot separated, or the only element making up the local-part)
- `<tt>this is"not\allowed@example.com</tt>` (spaces, quotes, and backslashes may only exist when within quoted strings and preceded by a slash)
- `<tt>this\ still\"not\\allowed@example.com</tt>` (even if escaped (preceded by a backslash), spaces, quotes, and backslashes must still be contained by quotes)

From 2014

http://www.huffingtonpost.com/2014/08/05/gmail-languages-spanish-chinese_n_5651797.html

Google To Recognize Emails That Use Special Characters

If you only speak English, you've probably never noticed that the only letters allowed in any email address have always been limited to "A" through "Z." But it's true: Never has a Francophone been able to claim an "é," nor a Mandarin Chinese speaker a "水."

We're still not there, but there is some good news for all you multilingual geniuses out there. As of Tuesday, Gmail [has become](#) the first major email provider to let people send emails to and receive emails from addresses with accent marks and letters from outside the Latin alphabet.



Now, Gmail users can contact someone with the email "武@メール.グーグル."

What languages need accent marks or non-Latin letters? Basically, all of them except English, including Chinese, Spanish, Hindi, Arabic, Portuguese, Bengali, Russian and Japanese. [A little more than 2.8 billion people](#) claim one of those eight languages as their native tongue, by the way.

That this transition took so long isn't *really* Google's fault. The company's hands were tied by an [organization called the Internet Engineering Task Force](#), which sets Internet standards that almost all tech companies agree to. Only in 2012 did the group decide to allow other languages' alphabets in email addresses. Two years later, the the normally fast-moving Google has begun the process of switching over. As of now, Yahoo, Microsoft and AOL, which owns The Huffington Post, also don't allow these "special characters."

In addition to helping Google be a good global citizen, the decision makes business sense too, as tech companies are eyeing the developing world as a promising area of expansion. So, really, this is one of those fortunate situations in which the right business decision is also the right decision, period.

CORRECTION: A previous version of this post inaccurately interpreted Google's announcement. While Google will now allow Gmail users to send emails to and receive emails from addresses with special characters, Gmail users themselves will not be able to include these special characters in their own email addresses.