

# Explainer: Codec support updates for MediaRecorder

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Tracking bug: [crbug.com/40276507](https://crbug.com/40276507)

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## TL;DR

Chromium's MediaRecorder API now supports HEVC encoding, introducing the `hvc1.*` codec string, and adds new codecs (`hev1.*` and `avc3.*`) supporting variable resolution video in MP4.

## General

Support for HEVC platform encoding was added in WebCodecs in Chromium M130. As a follow-up, support has been added to the MediaRecorder [API](#) in Chromium. The API now supports both MP4 and Matroska muxer types with different HEVC and H.264 mime type specifications. HEVC encoding is **only supported if the user's device and operating system provide the necessary capabilities**. The support is currently limited to Windows, macOS and Android hosts. ChromeOS and Linux support may follow in the future.

Problems with MP4 and variable input resolution were fixed by adding two new codecs whose bitstream specifications allow for in-stream resolution change information.

The added codec support is summarized in the below table:

Codec string	Variable Resolution Support in MP4	Details
<code>hvc1.*</code>	No	HEVC codec with the most widespread playback compatibility.
<code>hev1.*</code>	Yes	HEVC codec that permits inline resolution change information.
<code>avc3.*</code>	Yes	H.264 codec that permits inline resolution change information.

The [MediaRecorder.isTypeSupported\(\)](#) static method is available to check for support for the new codecs. A successful return indicates that the system has support.

When variable input resolution is not a factor in the design, we recommend using [hvc1.\\*](#) or [avc1.\\*](#) as it has the best compatibility for playback. If variable input resolution is present, we recommend either to scale input images to one size (for example by using [MediaStreamTrackProcessor/MediaStreamTrackGenerator](#)) or to switch codec to [hev1.\\*](#) or [avc3.\\*](#).

## Legal mime types for the new codecs

The MediaRecorder supports simplified codec specifications for legacy formats. It means that you can record by requesting mime types `"video/webm; codecs=vp9"` or `"video/mp4; codecs=avc1"`. To ensure the results match user expectation, we decided against exposing abbreviations and are only permitting full specifications for the new codecs.

Examples can be found on the [WebRTC samples MediaRecorder page](#) in the drop-down list. The codec strings are referenced in the [HEVC \(H.265\) WebCodecs Registration](#). For further reference, look at the Chromium parsing [code](#).

The screenshot shows the WebRTC samples MediaRecorder interface. At the top, there are five red buttons: "Start camera", "Start screenshare", "Start Recording", "Play", and "Download". Below these buttons, there are several labels: "Recording format", "Media Stream Co", "Echo cancellation", and "View source on G". A dropdown menu is open, displaying a list of recording formats. The first item is checked with a green checkmark. The list includes various combinations of video and audio codecs, such as vp9, vp8, h264, av01, hvc1.1.6.L186.B0, and hev1.1.6.L186.B0, along with their respective container formats like webm and mp4.

Recording format
✓ video/webm;codecs=vp9,opus
video/webm;codecs=vp8,opus
video/webm;codecs=h264,opus
video/webm;codecs=av01,opus
video/x-matroska;codecs=hvc1.1.6.L186.B0,opus
video/mp4;codecs=vp9,mp4a.40.2
video/mp4;codecs=vp9,opus
video/mp4;codecs=avc1.64003E,mp4a.40.2
video/mp4;codecs=avc1.64003E,opus
video/mp4;codecs=avc3.64003E,mp4a.40.2
video/mp4;codecs=avc3.64003E,opus
video/mp4;codecs=hvc1.1.6.L186.B0,mp4a.40.2
video/mp4;codecs=hvc1.1.6.L186.B0,opus
video/mp4;codecs=hev1.1.6.L186.B0,mp4a.40.2
video/mp4;codecs=hev1.1.6.L186.B0,opus
video/mp4;codecs=av01.0.19M.08,mp4a.40.2
video/mp4;codecs=av01.0.19M.08,opus
video/mp4

# Variable resolution support for MP4 with new **avc3.\*** and **hev1.\*** codecs

Despite the fact that Chromium MediaRecorder muxes formats only store a single resolution in the metadata, it is possible to create MediaStreamTracks where internal video frames have a non-fixed resolution.

Unfortunately, for MP4 the **avc1.\*** and **hvc1.\*** bitstream specifications do not support inline resolution change information (see [crbug.com/381179823](https://crbug.com/381179823)) and produce files which don't play back beyond the first differing resolution. We've concluded that avoiding scaling input frames is important, so we have added new codec types supporting inline resolution change information for H.264 and H.265, **avc3.\*** and **hev1.\***.

On encountering variable input resolution and the MediaRecorder is configured with a muxer and codec that won't support problem-free playback, Chromium will emit warnings to the console where recommendations on what to do are also present.

Note though that variable resolution recordings for codecs supporting it may not play everywhere. They do work in Chromium though.