



CSS Variables performance benchmark 2021



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Custom properties are available since *Chrome 49* (March 3, 2016). Although *Internet Explorer 11* doesn't support them, maybe it's time to jump on the bandwagon? What about performance?

I've decided to create a simple benchmark to check if 5000 variables can slow down page rendering. If you want to review or reuse my code, you can find it [here](#).

Testing conditions

- Generate 5000 colors.
- Create 10000 HTML nodes (reusability factor = 1).
- Output one HTML file with standard CSS classes.
- Output one HTML file with CSS variables.
- Run local node HTTP server and benchmark both files five times (using Chrome performance tools).

Linux, Google Chrome Version 92.0.4515.159 (Official Build) (64-bit)

Guest profile, no browser add-ons at all.

Testing tool

```
git clone git@github.com:fedek6/css-variables-benchmark.git
cd css-variables-benchmark
yarn
yarn build
yarn start:compiled [number of random colors] [reuse factor]
```

This way you'll get a directory called *bundle* with two files, static and dynamic.

You can use a package called `http-server` and benchmark both variants using *Chrome* performance tools.

Results

The dynamic file is obviously larger (because you need to output all variables and class names using them). Custom properties are advantageous when

used in more complex situations or when you need to declare different themes.

Static CSS (ms)

Try	Loading	Scripting	Rendering	Painting	System	Idle	Total
1	33	4	329	17	110	4948	5441
2	31	3	317	12	113	4928	5404
3	28	3	351	19	117	4950	5468
4	29	4	314	14	117	4943	5421
5	31	4	332	18	112	4944	5441
SUM	152	18	1643	80	569	24713	27175

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Dynamic CSS (ms)

Try	Loading	Scripting	Rendering	Painting	System	Idle	Total
1	33	3	381	16	110	4906	5449
2	38	2	358	20	114	4962	5494
3	36	2	371	24	106	4978	5517
4	36	2	321	11	106	4934	5410
5	33	3	353	22	108	4977	5496
SUM	176	12	1784	93	544	24757	27366

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Conclusion

Using 5000 CSS variables on 10 000 HTML nodes is only 0.7% slower than raw CSS. You must take into account that this is a very simple usage scenario. From what I see, just by using custom properties, you won't slow down your website rendering significantly.

You should be careful when using variables in CSS *calc* or when changing them often using *JavaScript*.