

## Sensitivity

HexChecks Test Swabs reliably detect levels of hexavalent chromium Cr(VI) below 0.1 micrograms. Low levels of hexavalent chromium show as light pink. Higher levels of hexavalent chromium show as darkening pink to purple color development.

### Cr(VI) Sensitivity [ $\mu\text{g}$ ]



Nondetectable

0.01

0.05

0.10

0.30

0.50

## Temperature Range

At **low temperatures**, just above its freezing point, the swab will change color at a slower rate but will still indicate the presence of hexavalent chromium. The liquid in hex checks has a freezing point of approximately -10C (15F).

At **high temperatures**, the reaction proceeds at a rapid rate with flash evaporation of the liquid dictating the limit at high temperatures. Allow substrates to cool to approximately 60C/140F for best results.

Temperature °C (approximate °F)	Observation
-15 (5)	Frozen, no color
-10 (15)	Liquid, no color
-5 (25)	Liquid, light purple
0 (32)	Purple
10 (50)	Purple
20 (70)	Purple
30 (85)	Purple
40 (105)	Purple
50 (120)	Purple
60 (140)	Purple
70 (160)	Flash evaporation of liquid, light purple
70+ (160+)	Flash evaporation of liquid, no color

## Specificity

HexChecks Test Swabs are highly specific to hexavalent chromium. To demonstrate specificity and understand interferences, swabs were tested against a selection of metals and metal salts that are commonly encountered at worksites.

Atomic Absorption Spectroscopy (AAS) standards and pure metals were obtained from established suppliers such as Alfa Aesar and Millipore Sigma. 1mL of each material was placed into a PTFE dish. A swab was rubbed into each solution. Samples sat undisturbed for three (3) minutes to allow color to develop.

**Note:** Upon drying, the wick of used swabs may turn pink. This is normal and does not indicate the presence of Cr(VI). If color does not develop within the faster of three (3) minutes or drying, the result is negative.

Material	Concentration	Color Change
Aluminum [as Aluminum(III) Chloride]	mg/mL	None
Aluminum [metallic]	bar stock	None
Arsenic [as Arsenic (III) Nitrate]	1 mg/mL	None
Cadmium [as Cadmium(II) Nitrate]	10 mg/mL	None
Chromium [metallic]	bar stock	None
Chromium, Hexavalent [as Ammonium Dichromate(VI)]	1 mg/mL	Purple
Chromium, Hexavalent [as Strontium Chromate(VI)]	mg/mL	Purple
Chromium, Trivalent [as Chromium(III) Oxide]	10 mg/mL	None
Cobalt [as Cobalt(II) Nitrate]	10 mg/mL	None
Copper [as Copper(II) Sulfate]	10 mg/mL	None
Copper [metallic]	bar stock	None
Iron [as Iron(III) Nitrate]	10 mg/mL	None
Iron [metallic]	bar stock	None
Lead [as Lead(II) Nitrate]	mg/mL	None
Magnesium [as Magnesium(II) Nitrate]	10 mg/mL	None
Nickel [as Nickel(II) Nitrate]	mg/mL	None
Selenium [as Selenium(IV) Oxide]	mg/mL	None
Silver [as Silver(I) Nitrate]	10 mg/mL	None
Silver [metallic]	bar stock	None
Sulfur [elemental, crystalline]	0.995	None
Thallium [as Thallium(I) Nitrate]	1 mg/mL	None
Tin [as Tin(II) Chloride]	10 mg/mL	None
Titanium [as Titanium(IV) Chloride]	mg/mL	None
Titanium [metallic]	bar stock	None
Zinc [as Zinc(II) Nitrate]	10 mg/mL	None