Canada’s one-dollar and two-dollar circulation coins have evolved

The new one- and two-dollar circulation coins represent a new evolution in the science of coin manufacturing by the Royal Canadian Mint. They have a different metal composition and are produced using more advanced technology than their predecessors. They also incorporate leading-edge security features.

Are the old one- and two-dollar coins still legal tender?

All of Canada’s circulating one- and two-dollar coins remain legal tender. Both the alloy and multi-ply plated version of the one- and two-dollar circulation coins will circulate side by side and will continue to be accepted for the purpose of daily commercial transactions at retail locations and in vending equipment. Over time, the Mint will gradually remove alloy coins from circulation and replace them with new multi-ply plated versions, but this process will take several years.

New metal composition and production process

The previous-generation one-dollar and two-dollar coins were made of an alloy of base metals, generally copper and nickel. The new coins are composed of a sandwich-like core of steel, plated with alternating layers of different metals such as copper, nickel and brass, produced by an advanced plated-steel technology called multi-ply plating. This revolutionary coin manufacturing process was developed and patented by the Mint and it has been adopted by numerous foreign customers for whom the Mint’s technology represents the best value, quality and security in the world.

New visible security features

Produced at the Mint’s high-speed production facility in Winnipeg, Manitoba, the new generation of one- and two-dollar coins incorporates advanced security features in their design. These new features — never before applied to Canadian circulation coins — make Canada’s already secure coinage system even more resistant to counterfeiting.

Both coins contain a laser mark — a very fine contrasting background with a patterned image, produced by using a laser to micro-engrave the dies used to strike the coins. The laser mark which will appear on Canada’s one-dollar and two-dollar coins is a world first, developed by the Mint.

The two-dollar coin has two additional elements that enhance security:

- **Virtual image:** A specialized engraving technique applied directly to the coin die impresses two-sided grooves on the face of the coin, with a different image appearing on each side of the groove. When the two-dollar coin is angled to the left, the viewer sees the first image; when it is angled to the right, the viewer sees the second image.
- **Edge-lettering:** The two-dollar coin has lettering engraved around its outside edge.
The minting and circulation of the new one-dollar and two-dollar coins also provide a number of benefits to Canada.

**Enhanced Security, Superior Integrity**

The integrity of Canada’s circulation coinage system is recognized as among the world’s best. This is because the Mint takes security very seriously, which is even more important for high-value denomination coins. Although circulation coin counterfeiting is not a problem in Canada, other countries, including leading G8 nations, are facing a costly rise in this problem.

The new security features ensure that the Mint stays even further ahead of potential counterfeiting threats and these proactive measures help maintain confidence in Canada’s currency system. The new technology featured on the one- and two-dollar circulation coins makes it even more technically prohibitive to replicate their features in two main ways:

- **The production technique makes coins more secure for automatic coin readers**
  Coins made from the Mint’s patented multi-ply plated steel process are extremely reliable for authentication through “automatic acceptance” — acceptance of the coin by automatic coin readers such as vending machines and parking meters.

  Automatic coin readers read the “electromagnetic signature” of a coin (or any metal disk) in an effort to determine if it is a genuine coin. This signature is based on the composition of the metals contained in the coin.

  The multi-ply plating process allows the Mint to control the plating thickness of the alternating layers of nickel or brass and copper. This provides greater flexibility in the development of the electromagnetic signature compared to the electromagnetic signature generated by non-plated alloy coins of the same dimensions. This will allow automatic coin readers to more easily identify counterfeit or non-coin objects.

- **Changes to the design and distinguishing features make coins more difficult to copy**
  The advanced technology used to produce the laser mark, virtual image and edge-lettering will make their duplication extremely difficult. The high level of expertise to re-create all three technologies does not exist outside the Mint and they cannot be imitated using conventional minting methods.

**Cost savings**

The Government of Canada announced steps to modernize Canada’s currency system in the March 2010 budget, which mandated changes in the composition of the current one- and two-dollar coins to multi-ply plated steel.

In recent years, the prices of both nickel and copper have risen and fluctuated significantly, which has increased the cost of manufacturing coins that contain a higher proportion of pure metal or base-metal alloys. In an age of volatile metal costs, there is a continued need to produce coins at more economical and predictable costs, without compromising quality.
The Royal Canadian Mint’s patented multi-ply plating technology is one of the most cost-effective coin production processes in the world, due to the significant reduction in the use of copper and nickel. Use of this advanced technology to produce the new one- and two-dollar coins will generate savings estimated at $15 million each year for the Government of Canada. It also mitigates the risk of a shortage of materials to produce circulation coins, as steel is more readily available than nickel.

Since 2001, Canada’s one-, five-, 10-, 25- and 50-cent coins have been produced with this revolutionary technology. This conversion from expensive nickel and copper alloys to multi-ply plated steel has produced savings to date of over $250 million.

**Improved Durability**

Coins produced with multi-ply plated steel technology are generally more durable and last longer compared to coins produced with other material, such as nickel. By bonding alternating layers of metal over a steel core, the unique multi-layered metallurgic structure of a multi-ply plated coin results in a harder surface than most conventional alloy coins.

**Recognizing the New One-dollar and Two-dollar Coins**

Aside from the three new visible security features, the Mint took special care to produce new one- and two-dollar circulation coins with a similar look and feel as the current coins in terms of their diameter, thickness and colour, even though their composition is different.

Although the new coins will be marginally lighter than their predecessors because multi-ply plated steel is less dense than an alloy composition, the coins will maintain their general look and feel and should not feel perceptibly lighter when handled. This minimal reduction in weight will not be an issue for vending machine acceptance as vending mechanisms can employ as many as nine different parameters to verify a coin’s authenticity.

<table>
<thead>
<tr>
<th>Circulation Coin Weight (g)</th>
<th>Current</th>
<th>New</th>
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<tbody>
<tr>
<td>$1 Dollar</td>
<td>7.0</td>
<td>6.27</td>
</tr>
<tr>
<td>$2 Dollar</td>
<td>7.3</td>
<td>6.92</td>
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