



European Commission

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Technical specifications

Euro banknotes and coins are designed to meet a number of technical imperatives. Security features are critical to help detect unauthorised copying. The physical appearance of the currency is pleasing both to the eye and to the touch, with many features built in to help visually impaired people identify different notes and coins and their respective values.

Designers of the euro banknotes and coins consulted the European Blind Association to help develop a currency recognisable to all citizens. Several features were incorporated:

In banknotes

- Each denomination is a different size
- Each different banknote has a dominant colour and contrasting colours for pairs of banknotes in sequence (e.g. red for 10-euro notes, blue for 20s)
- Values are printed in large, bold figures
- Elements of the notes are printed in relief using the 'intaglio' printing method which generates tactile marks along the edges of the 200- and 500-euro notes

In coins

- Different shapes, colours and edges to the coins that make it easier to differentiate the values.
- The weight of each coin is different – the heavier the coin, the higher the value (except for the €1 coin).
- The thickness of each coin varies according to value – the thicker the coin, the higher the value (except for the 1- and 2-euro coins).
- The values are clearly displayed on the common side of the coins.

Countering the counterfeiters

Counterfeiting and security were major design considerations for both the notes and coins. Security features in the notes include:

- Cotton fibres giving the notes a special texture
- Special printing making the ink feel raised in the main image, the lettering and the value numerals
- A fluorescent stripe through the note
- Watermark designs which appear when held up to the light
- A visible security thread
- Foil features show a hologram, when tilted, of the euro symbol and banknote value.
- For higher value notes (the 50, 100, 200 and 500) extra security features were introduced, such as colour-shifting inks (i.e. when tilted, the value numeral changes colour)

The European Central Bank provides an interactive demonstration of how to recognise a genuine euro banknote

on its website.

Anti-forgery details in the coins include:

- Bi-metal detailing in the 1- and 2-euro coins, the inner part of which is magnetic.
- Edge lettering on the 2-euro coin and other distinctive milling around the edges of virtually all coins
- Varying weights and sizes to ensure that correct value coins are used in different coin-operated machines, for example.
- Unique metal composition ('Nordic gold') for the 10-, 20- and 50-cent coins, which is difficult to melt and exclusively used for coins.

The fight against counterfeiting is led by the Counterfeit Analysis Centre at the ECB for banknotes, and the Commission's Antifraud Office (OLAF) for coins. OLAF coordinates the Member States' actions for the technical protection of the euro through the European Technical and Scientific Centre in Paris. It also provides training and technical assistance through the Pericles programme. National mints use their own national analysis centres to detect forgeries, which are then forwarded to the relevant European centre.

Denomination	Dimensions, composition, features
1 cent	16.25 mm (across); 1.67 mm (rim); 2.30 g (weight); round (shape); red (colour); copper-covered steel; smooth (edge)
2 cent	18.75 mm; 1.67 mm; 3.06 g; round; red; copper-covered steel; smooth with a groove
5 cent	21.25 mm; 1.67 mm; 3.92 g; round; red; copper-covered steel; smooth
10 cent	19.75 mm; 1.93 mm; 4.10 g; round; yellow; Nordic gold; shaped edge with fine scallops
20 cent	22.25 mm; 2.14 mm; 5.74; Spanish flower; yellow; Nordic gold; plain
50 cent	24.25 mm; 2.38 mm; 7.80 g; round; yellow; Nordic gold; shaped edge with fine scallops
€1	23.25 mm; 2.33 mm; 7.50 g; round; outer part yellow/inner white; outer nickel-brass/inner three layered: copper-nickel, nickel, copper-nickel; interrupted/milled
€2	25.75 mm; 2.20 mm; 8.50 g; round; outer part white/inner yellow; outer copper-nickel/inner three layered: nickel brass, nickel, nickel brass; edge lettering/fine milled
€5	120 x 62 mm; grey (colour); Classical (architectural period)
€10	127 x 67 mm; red; Romanesque
€20	133 x 72 mm; blue; Gothic
€50	140 x 77 mm; orange; Renaissance
€100	147 x 82 mm; green; Baroque and Rococo
€200	153 x 82 mm; yellow-brown; iron and glass architecture
€500	160 x 82 mm; purple; modern 20th century architecture