The invention relates to a sinter cooler (1, 1b-1e) for counter-current operation, with a circular shaft (2, 2a) for receiving sinter (100), the shaft (2, 2a) having at least one upper charge opening (5) and at least one lower discharge opening (6). In order to provide a sinter cooler in which a highly homogeneous airflow is achieved while excessive abrasion is avoided, the invention provides that • in a lower part (2.1), the shaft (2, 2a) is divided into a plurality of compartments (7, 7a) which are tangentially spaced apart; and • each compartment (7, 7a) has at least one side wall (8) with radial inlet vanes (9), which extend radially, for intake of cooling air into the shaft (2, 2a); • the sinter cooler (1, 1b-1e) being so configured that during operation, sinter (100) is charged through the charge opening (5) and moves downwards through the compartments (7, 7a) to the discharge opening (6), while cooling air is sucked in through the radial inlet vanes (9) and upwards through the shaft (2, 2a). The invention also relates to a method for cooling sinter in such a sinter cooler.