of the covalent halogen compound is more than 15% by mass, which is the upper limit specified in the present invention, reliability decreases.

[0026] It is preferable that the rosin ester be one or more types of rosin esters each being one type of rosin esterified or one or more types of rosin esters each being a mixture of two or more types of rosin esterified. Examples of the rosin to be esterified include natural rosin, such as gum rosin, wood rosin and tall oil rosin, and derivatives obtained from the natural rosin. Examples of the rosin derivatives include: purified rosin; polymerized rosin; hydrogenated rosin; disproportionated rosin; hydrogenated disproportionated rosin; acid-modified rosin; phenol-modified rosin; α, β-unsaturated carboxylic acid-modified products (acrylated rosin, maleated rosin, fumarated rosin, etc.); purified products, hydrides and disproportionated products of polymerized rosin; purified products, hydrides and disproportionated products of α, β-unsaturated carboxylic acid-modified products; and mixtures of any of these. The rosin ester is preferably solid, but may be liquid if the flux can have a viscosity to be processed to form resin-cored solder. The viscosity required for the flux for resin-cored solder is 3,500 Pa·s or more, for example.

[0027] It is preferable that the covalent halogen compound be one type or two or more types of trans-2,3-

present invention may contain any one or more of amine halogen salts that are each a compound obtained by reacting any of the abovementioned amines with any of the abovementioned hydrogen halides. Examples of the amine halogen salts, which are each a compound obtained by reacting an amine with a hydrogen halide, include N,N-diethylaniline·HBr.

[0036] When an organic acid and an amine are added to the flux, predetermined amounts of the organic acid and the amine are reacted to be salt. Therefore, two or more types of organic acids and amines may be reacted to be salt and then added to the flux in order to prevent or reduce reaction of the organic acid(s) and the amine(s).

[0037] The flux for resin-cored solder of this embodiment may further contain, as an additive(s), 0% by mass to 10% by mass of a phosphate ester(s), 0% by mass to 5% by mass of a silicone(s), 0% by mass to 5% by mass of a surfactant(s), 0% by mass to 13% by mass of a solvent(s), and 0% by mass to 3% by mass of a defoamer(s).

[0038] Examples of the phosphate ester include methyl acid phosphate, ethyl acid phosphate, isopropyl acid phosphate, monobutyl acid phosphate, butyl acid phosphate, dibutyl acid phosphate, butoxyethyl acid phosphate, 2-ethylhexy acid phosphate, bis(2-ethylhexy) phosphate, monoisodecyl acid phosphate, isodecyl acid phosphate, lauryl acid phosphate, isotridecyl acid phosphate, stearyl acid

known solvents can be used. The solvent may be either solid or liquid. Examples of the solid solvent include neopentyl glycol (2,2-dimethyl-1,3-propanediol), dioxane glycol, 4-(1,1,3,3-tetramethylbutyl)phenol, and catechol. The present invention may contain any one or more types of the abovementioned solvents.

[0042] Examples of the defoamer include acrylic polymer, vinyl ether polymer, and butadiene polymer. The present invention may contain any one or more types of the abovementioned deformers.

[0043] <Configuration Example of Resin-cored Solder of Embodiment>

Resin-cored solder of an embodiment is wire-shaped solder filled with the above-described flux for resin-cored solder. The flux for resin-cored solder is required to be solid at room temperature (e.g., 25°C) in order not to flow out in a step of processing solder, or required to have a predetermined high viscosity with which the flux does not flow out. The viscosity required for the flux for resin-cored solder is 3,500 Pa·s or more, for example. If the flux for resin-cored solder is a low-viscosity liquid (viscosity of less than 3,500 Pa·s) at 25°C, workability of the resin-cored solder decreases, which is undesirable. As far as the resin-cored solder can be supplied into a through hole formed along the central axis of a soldering iron described below, the shape of the resin-cored

is used in a soldering method of an embodiment. FIG. 2A, FIG. 2B, FIG. 2C and FIG. 2D illustrate the soldering method of this embodiment.

[0047] The soldering method of this embodiment is applied to through-hole technology, single-sided boards, and so forth. A soldering iron 1A that is used in the soldering method of this embodiment has a through hole 2 formed along the central axis of the soldering iron 1A and a heater 3 as a heating means that heats the soldering iron 1A.

[0048] The diameter D of the through hole 2 of the soldering iron 1A is larger than the diameter d_1 of a resin-cored solder H. Hence, the resin-cored solder H can be supplied to a tip 10 of the soldering iron 1A through the through hole 2. Also, the diameter D of the through hole 2 of the soldering iron 1A is larger than the diameter d_2 of a lead terminal 101 of an electronic component 100. Hence, the lead terminal 101 can be inserted into the through hole 2.

[0049] In the soldering method of this embodiment, as shown in FIG. 2A, the lead terminal 101 of the electronic component 100 is inserted into a through hole 201 formed in a substrate 200. Meanwhile, the soldering iron 1A is heated by the heater 3 to a temperature exceeding the melting point of solder, and controlled so as to keep a predetermined temperature exceeding the melting point of solder. Next, as shown in FIG. 2B, the tip 10 of the soldering iron 1A is