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⑤④ **Heat-sensitive recording sheet.**

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Description

BACKGROUND OF THE INVENTION

5 1) Field of the Invention

The present invention relates to a heat-sensitive recording sheet. More particularly, the present invention relates to a heat-sensitive recording sheet having a superior resistance to curling, even under variations of the ambient humidity, and a high heat-sensitivity.

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2) Description of the Related Arts

Various types of heat-sensitive recording sheets on which colored images are formed by utilizing a color-forming reaction between a colorless or light colored dye precursor and a color-developing agent, for example, a phenol compound or organic acid, were disclosed by, for example, Japanese Examined Patent Publication (Kokoku) No. 45-14039, and practically employed.

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Those heat-sensitive recording sheets are widely utilized for measurement recorders, terminal recorders of computers and communicators, facsimile printers and printers of automatic ticket vending machines. The printers and recorders are provided with a heating element, for example, a thermal head or thermal pen, and colored images are produced on the recording sheet by imagewise heating the recording sheet through the heating element.

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Due to recent diversifications in the use of, and development in the capability of, recorders and printers, recording sheets must now have an enhanced quality and capability.

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For example, to respond to developments in the recording speed of the facsimile machines from several minutes to less than one minute for recording one A4 size sheet, the heat-sensitive recording sheet must have a significantly enhanced heat-sensitivity, compared with conventional recording sheets.

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To meet the above-mentioned requirement, various attempts have been made to improve the heat-sensitive recording sheet, and most of these attempts relate to a combination of specific substantially colorless dye precursors with a specific color-developing agent, for example, phenol compounds or organic acids, or to addition of a specific fusible material (sensitizing agent) to the color-forming layer.

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Nevertheless, the results of these attempts are not always satisfactory.

As stated above, the employment of facsimile machines has become wide-spread, particularly for home use, as facsimile machines are now small in size and cheap, but this type of facsimile machine requires a high heat-sensitive recording sheet upon which a colored image having a satisfactorily high darkness can be formed by using as little heat energy as possible.

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To further sensitize the heat-sensitive recording sheet, usually the contents of the dye precursor, color-developing agent and sensitizing agent are increased, and the color-forming components in the recording sheet are fused and form a colored image upon heating by the heating elements of the recorder or printer. When the content of the color-forming components in the recording sheet is large, a portion of the fused components adheres to the heating element to form thermal head deposits thereon; the higher the total amount of color-forming components, the larger the amount of the thermal head deposits. Thermal head deposits causes difficulties in the continuous supply of recording sheets, sticking of recording sheets, loud printing noises, and the formation of undesirable line-shaped stains and defective images.

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In an attempt to prevent the formation of thermal head deposits, fine inorganic particles, for example, fine particles of calcium carbonate, magnesium carbonate, talc, clay, silica, calcium silicate or aluminum silicate are added to the heat-sensitive color-forming layer. Nevertheless, the addition of the inorganic particles does not completely prevent the formation of thermal head deposits from high heat-sensitive recording sheets having a large amount of color-forming component in the heat-sensitive color-forming layer.

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In another attempt to prevent thermal head deposits, a wax material has been added to the heat-sensitive recording layer. Nevertheless, the effect of the wax material is not satisfactory with regard to a high heat-sensitive recording sheet containing a large content of color-forming components.

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Under the above-mentioned circumstances, there is a need to improve the heat-sensitive color-forming layer to an extent such that, even when the content of the color-forming components is reduced to as low a level as possible, to prevent thermal head deposits, the heat-sensitive color-forming layer can provide a colored image having a satisfactorily high darkness.

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When a facsimile machine is used at home, the heat-sensitive recording sheet must have a high resistance to curling, because the facsimile machine is often used without air-conditioning and under an environment wherein the humidity varies over a wide range. For example, when the heat-sensitive recording sheet is ex-

posed to a high humidity atmosphere, the substrate sheet in the recording sheet absorbs moisture and thus is elongated, whereas the heat-sensitive color-forming layer does not absorb moisture and is not elongated. Accordingly, the recording sheet curls inward so that the heat-sensitive color-forming layer forms an inside
 5 face of the curled sheet, and when tightly curled, the flat recording sheet assumes the shape of a cylinder. Conversely, when the heat-sensitive recording sheet is exposed to a very dry atmosphere, the substrate sheet is becomes excessively dry and is shrunk in such a way that the recording sheet curls so that the substrate sheet forms an inside face of the curled recording sheet.

Accordingly, there is an urgent need for the provision of an improved heat-sensitive recording sheet having
 10 a high heat-sensitivity and free from curling even when employed in a non-air-conditioned environment, a high humidity atmosphere or a very dry atmosphere.

SUMMARY OF THE INVENTION

15 An object of the present invention is to provide a heat-sensitive recording sheet able to be employed without curling even in a non-air conditioned environment, a high humidity atmosphere or a very dry atmosphere, and having a satisfactory heat-sensitivity.

The above-mentioned object can be attained by the heat-sensitive recording sheet of the present invention, which comprises a substrate sheet and a heat-sensitive color-forming layer formed on at least one surface
 20 of the substrate sheet and comprising a substantially colorless dye precursor, a color-developing agent reactive with the dye precursor upon heating to develop a color, and a binder, the substrate sheet consisting essentially of a paper sheet produced from a dry pulp beaten to a freeness of from 250 ml to 550 ml, determined in accordance with the Canadian Standard Freeness (CSF) Test Method.

25 DESCRIPTION OF THE PREFERRED EMBODIMENTS

In general, pulp is produced by delignifying (pulping) and bleaching a raw cellulosic material, for example, wood, bagasse, and rice straw. Where the resultant bleached pulp fibers are supplied in the state of a slurry or thick gruel to a paper-forming procedure through a beating procedure, this type of pulp is referred to as a
 30 wet pulp or a slush pulp.

Where the bleached pulp fibers are dried to provide a pulp sheet before supply to the paper-forming procedure, through a procedure in which the pulp sheet is preliminarily loosened in water to form a pulp slurry and then subjected to a beating procedure, this dried pulp is referred to as a dry pulp.

In the heat-sensitive recording sheet of the present invention, the substrate sheet must consist essentially
 35 of a paper sheet which has been produced from a dry pulp beaten to a freeness of from 250 ml to 550 ml determined in accordance with the Canadian Standard Freeness (CSF) Test Method.

The above-mentioned specific substrate sheet of the present invention makes a great contribution to the exhibiting by the resultant heat-sensitive recording sheet of a superior resistance to curling and a high sensitivity to thermal color-formation.

40 The reasons for the specific contribution of the substrate sheet of the present invention on the curling resistance and heat sensitivity are assumed to be as follows.

In the preparation of the dry pulp by drying the bleached pulp fibers, a number of internal cross-linkages are formed between the polymer molecules in the pulp fibers, to provide keratin-like hard structures therein, and therefore the pulp fibers in the dry pulp have a higher stiffness than the pulp fibers in the wet pulp.

45 Where the dry pulp is loosened in water and converted to a paper sheet, the dry pulp fibers in the resultant paper sheet are brought into contact with each other at a relatively small number of contact points, in comparison with wet pulp fibers having a relatively low stiffness.

In general, when wetted with water, the pulp fibers are swollen, and when dried, the pulp fibers are shrunk. The dimensional change in thickness (cross sectional diameter) of the pulp fibers is much larger than that in
 50 the length of the pulp fibers.

Also, in general, the pulp fibers in a usual machine-made paper sheet are orientated mostly in the longitudinal direction of the paper sheet.

Where the orientated pulp fibers are spaced from each other and are wetted with water, the expansion in the cross sectional area of the pulp fibers is absorbed by the gaps between the pulp fibers, and thus the
 55 paper sheet does not elongate in the transversal direction thereof.

If the orientated pulp fibers are brought into intimate contact with each other in the paper sheet, the cross-sectional expansion of the wetted pulp fibers results in a certain elongation in the transversal direction of the paper sheet.

Accordingly, when wetted or dried, the dimensional change in the transversal direction of the paper sheet

depends on the contacting conditions of the pulp fibers in the paper sheet. Namely, the dimensional change in the transversal direction of the paper sheet increases with an increase in the number of mutual contact points of the pulp fibers.

5 In the paper sheet made from the dry pulp, the dry pulp fibers in the paper sheet are brought into contact with each other at a relatively small number of contact points, in comparison with the wet pulp fibers in the paper sheet made therefrom, and thus the dimensional change in the transversal direction of the paper sheet when wetted or dried is relatively small in comparison with that of the wet pulp paper sheet. Namely, the paper sheet made from the dry pulp is dimensionally stable even in a very wet or dry atmosphere.

10 In general, a curling of a multiple layer sheet is caused by a difference in the dimensional changes of the front surface layer and the back surface layer.

In the heat-sensitive recording sheet of the present invention, both the substrate sheet and the heat-sensitive color-forming layer are dimensionally stable, even under a wet or dry condition, and thus the heat-sensitive recording sheet of the present invention exhibits a superior dimensional stability and a superior resistance to curling even under high humidity or dry conditions.

15 The heat-sensitive recording sheet of the present invention containing a substrate sheet made of a dry pulp exhibits a higher heat-sensitivity for thermal color formation than that made from a wet pulp, and the reasons for this high heat sensitivity are assumed to be as follows.

20 Since the number of contacting points of the dry pulp fibers in the resultant paper sheet is relatively small, a larger number of pores are formed in the dry pulp paper sheet than in the wet pulp paper sheet. Namely, the total volume of the pores in the dry pulp paper sheet is larger than that in the wet pulp paper sheet.

The pores in the paper sheet effectively increase the thermal insulating property of the paper sheet.

25 Accordingly, when a heat is applied from a thermal head to a heat-sensitive color-forming layer, the substrate sheet of the present invention having an enhanced thermal insulating property effectively prevents a useless diffusion of the heat through the substrate sheet layer, and therefore, the heat-sensitive recording sheet of the present invention exhibits a high heat-sensitivity for the thermal color-formation.

In the preparation of the substrate sheet of the present invention, the dry pulp is beaten to a freeness (CSF) of 250 ml to 550 ml.

30 When the dry pulp is excessively beaten to a freeness (CSF) of less than 250 ml, the resultant beaten dry pulp fibers are excessively entangled with each other, and the number of contacting points between the pulp fibers becomes undesirably large. Therefore, the resultant substrate sheet exhibits an increased dimensional change, particularly in the transversal direction, when wetted or dried, and a lower number of pores are formed among the pulp fibers, and thus the resultant heat-sensitive recording sheet does not have a satisfactory in the resistance to curling or a satisfactory heat-sensitivity.

35 When the dry pulp is insufficiently beaten to a freeness (CSF) of more than 550 ml, the number of the contacting points between the pulp fibers in the resultant paper sheet is excessively small, and the too many pores are formed in the resultant paper sheet, and thus the resultant heat-sensitive recording sheet exhibits an unsatisfactory heat-sensitivity. Also, the excessively small number of contacting points of the pulp sheet and the excessive pores formed in the substrate sheet result in the following disadvantages.

40 That is, when a coating liquid for the heat-sensitive color-forming layer is applied to a surface of the porous substrate sheet by using a coating device consisting of a coating liquid-applying roller and backing rollers, the coating liquid easily permeates the porous substrating sheet and is deposited and accumulated on the backing rollers. Also, the porous substrate sheet has a poor mechanical strength, and thus is often broken during the coating operation.

45 To avoid the above-mentioned disadvantages, the dry pulp to be formed as the substrate sheet of the present invention must have a freeness (CSF) of from 250 ml to 550 ml, preferably from 300 ml to 500 ml.

The dry pulp usable for the present invention is selected from soft wood dry pulps (dry N pulps), hard wood dry pulps (dry L pulps), and mixtures of the dry N pulps and the dry L pulps. The dry pulp may contain, as a minor component, a pulp recovered from waste paper.

50 In the preparation of a pulp slurry from two or more different types of dry pulps, the dry pulps may be separately beaten and the beaten dry pulps then mixed together, or the dry pulps may be mixed together and the mixture then subjected to the beating procedure.

Also, in the preparation of the pulp slurry, the dry pulp may be blended with a small amount of a wet pulp, but in view of the object of the present invention, the amount of the wet pulp should be 20% or less, preferably 15% or less, based on the total weight of the dry pulp and the wet pulp.

The substrate sheet of the present invention optionally contains an additive comprising at least one member selected from the group consisting of dry paper strength reinforcers, for example, cationic starches, cationic polyacrylamides, and anionic polyacrylamides; sizing agents, for example, fatty acid salts, alkylketene dimer, alkenyl succinic acid, rosin, maleic acid-modified rosin, cationic sizing agents, and reactive sizing

agents; fillers, for example, clay, talc, kaolin, and calcium carbonate; wet paper strength reinforcers, for example, melamine-formaldehyde resins and epoxidized polyamide resins; fixing agents, for example, aluminum sulfate and cationic starches; and pH-adjusting agents, for example, caustic soda and sodium carbonate.

5 The substrate sheet is optionally tubsized or size-pressed by a treating liquid containing a water-soluble polymer, for example, polyvinyl alcohol or starch, or another polymeric material, for example, a SBR latex or styrene-maleic anhydride copolymer.

The substrate sheet usable for the present invention preferably has a basis weight of from 30 to 200 g/m².

10 In the preparation of the heat-sensitive recording sheet of the present invention, at least one surface of the substrate sheet is coated with the coating liquid directly or through an intermediate layer comprising a pigment, a binder, and optionally, a surfactant, for example, a dispersant a waterproofing agent or a defoaming agent, and having a thickness of 1 to 15 μm.

The heat-sensitive color-forming layer comprises a substantially colorless dye precursor, a color-developing agent, and a binder.

15 The substantially colorless dye precursor can be selected from the leuco basic dyes usually employed for a conventional heat-sensitive color-forming layer, for example, triphenylmethane leuco dyes, triphenylmethanephthalide leuco dyes, fluoran leuco dyes, diphenylmethane leuco dyes, leuco Auramine, dyes, spiropyran leuco dyes, leuco indolyl dyes, and leuco indigo dyes.

Specific examples of the dye precursor are:

20 crystal violet lactone,
 3-(N-ethyl-N-isopentylamino)-6-methyl-7-anilino-fluoran,
 3-diethylamino-6-methyl-7-anilino-fluoran,
 3-diethylamino-6-methyl-7-(o-, and p-dimethylanilino)fluorans,
 3-(N-ethyl-p-toluidino)-6-methyl-7-anilino-fluoran,
 25 3-pyrrolidino-6-methyl-7-anilino-fluoran,
 3-dibutylamino-6-methyl-7-anilino-fluoran,
 3-(N-cyclohexyl-N-methylamino)-6-methyl-7-anilino-fluoran,
 3-diethylamino-7-(o-chloroanilino)fluoran,
 3-diethylamino-7-(m-trifluoromethylanilino)fluoran,
 30 3-diethylamino-6-methyl-7-chloro-fluoran,
 3-diethylamino-6-methyl-fluoran, and
 3-cyclohexylamino-6-chloro-fluoran.

The dye precursor is usually present in the heat-sensitive color-forming layer in an amount of 5 to 20% by weight.

35 The color developing agent is usually present in the heat-sensitive color-forming layer in an amount of 10 to 40% by weight, and can be selected from conventional color developing agents.

40 Preferably, the color-developing agent comprises at least one member selected from the group consisting of phenol compounds and organic acid compounds, for example, bisphenol A (2,2-bis(4-hydroxyphenyl)propane), p-hydroxybenzoic acid derivatives (Japanese Unexamined Patent Publication No. 52-140,483), phthalic acid derivatives, naphthoic acid derivatives bisphenol S, 4-hydroxy-4'-isopropoxydiphenylsulfone (Japanese Unexamined Patent Publication No. 60-13852), 1,1-bis(4-hydroxyphenyl)cyclohexane, 1,7-bis(hydroxyphenylthio)-3,5-dioxahseptane (Japanese Unexamined Patent Publication No. 59-52694) and gallic acid derivatives.

45 The heat-sensitive color-forming layer of the present invention contains a binder in an amount of 5% to 20% by weight. The binder can be selected from conventional binders and preferably comprises at least one member selected from the group consisting of water-soluble polymeric materials, for example, polyvinyl alcohols having various molecular weights; starch and derivatives thereof; cellulose derivatives, for example, methoxycellulose, hydroxyethylcellulose, carboxymethylcellulose, methylcellulose and ethylcellulose; and water-soluble synthetic polymeric materials, for example, sodium polyacrylate, polyvinylpyrrolidone, acrylamide-acrylic acid ester copolymers, acrylamide-acrylic acid ester-methacrylic acid terpolymers, styrene-maleic anhydride copolymer sodium salts, polyacrylamide, sodium alginate, gum arabic, geratine, and casein; and latexes of water-insoluble polymeric materials, for example, polyvinyl acetate, polyurethane, styrene-butadiene copolymers, polyacrylic acid, polyacrylic acid esters, vinyl chloride-vinyl acetate copolymers, polybutyl methacrylate, ethylene-vinyl acetate copolymers and styrene-butadiene-acrylic monomer copolymers.

55 The heat-sensitive color-forming layer of the present invention optionally contains an additional heat fusible sensitizing agent consisting of at least one conventional heat-fusible substance having a melting point of from 80°C to 110°C, for example, phenyl 1-hydroxy-2-naphthoate, p-benzyl-biphenyl, benzyl naphthyl ether or dibenzylterephthalate. The additional sensitizing agent is preferably contained in an amount of 5 to 20%, based on the weight of the color developing agent.

The heat-sensitive color-forming layer of the present invention optionally further contains 10 to 50% by weight of a white pigment comprising fine particles of at least one member selected from inorganic pigments, for example, calcium carbonate, silica, zinc oxide, titanium dioxide, aluminum hydroxide, zinc hydroxide, barium sulfate, clay, calcined clay, talc, and surface-treated calcium carbonate and silica; and organic pigments, for example, urea-formaldehyde resins, styrene-methacrylic acid copolymers, and polystyrene.

The heat-sensitive color-forming layer optionally also contains a defoaming agent for preventing the foaming of the coating liquid in the coating procedure, or a surface active agent for enhancing the coating property of the coating liquid.

The heat-sensitive color-forming layer of the present invention optionally furthermore contain 5 to 30% by weight of a wax substance as a lubricant, releasing agent or sensitivity-controlling agent which can be selected from conventional animal, vegetable and mineral wax materials, and preferably, comprises at least one member selected from, for example, paraffin waxes, microcrystalline waxes, polyolefin waxes, and carnoubia wax, higher fatty acids, metal salts of higher fatty acids, and condensation products of higher fatty acids and amine compounds.

Usually, the heat-sensitive color-forming layer of the present invention is preferably in a dry weight of 1 to 15 g/m² more preferably 2 to 10 g/m².

EXAMPLE

The present invention will be further explained by way of specific examples, which are representative and do not in any way restrict the scope of the present invention.

Examples 1 to 3

In each of Examples 1 to 3 a paper sheet having a basis weight of 45 g/m² was prepared from a pulp slurry containing 0.5% by weight of a mixture of 20 parts by weight of a dry NBKP, 80 parts by weight of a dry LBKP, one part, by weight of rosin, and 2 parts by weight of aluminum sulfate, by a usual paper-forming method. The dried pulp mixture was beaten to the freeness (CSF) as shown in Table 1.

An aqueous dispersion (A) of a dye precursor was prepared from the following composition:

(A) Dye precursor dispersion

Component	Amount (part by wt.)
3-(N-isopentyl-N-ethylamino)-6-methyl-7-anilinofluoran	20
10% aqueous polyvinyl alcohol solution	40
Water	40

Separately, an aqueous dispersion (B) of a color-developing agent was prepared from the following composition:

(B) Color-developing agent dispersion

Component	Amount (part by wt.)
Bisphenol A	15
p-Benzylbiphenyl	15
10% aqueous polyvinyl alcohol solution	40
Water	30

Each of the dispersions (A) and (B) were separately treated in a sand grinder to pulverize the dye precursor

particles and the color-developing agent particles to an average size of 1 μm .

The resultant dispersions (A) and (B) were mixed with other materials in the amounts as shown below, to provide a coating liquid for a heat-sensitive color-forming layer.

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	Dispersion (A)	10 parts by weight	
	Dispersion (B)	15	"
10	50% calcium carbonate	8	"
	aqueous dispersion		
	10% polyvinyl alcohol	30	"
	aqueous dispersion		
15	30% zinc stearate aqueous	2	"
	dispersion		
	30% parafin wax aqueous	2	"
20	dispersion		

The coating liquid was coated on a surface of the substrate sheet to an extent such that, after drying and solidifying, the resultant dry coating layer had a weight of 7 g/m², and thereafter, the coated liquid layer was dried to form a heat-sensitive color-forming layer, and thus a heat-sensitive recording sheet was obtained.

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The recording sheet was treated by a super calender to smooth the surface of the heat-sensitive color-forming layer until it exhibited a Bekk smoothness of 800 seconds.

The resultant recording sheet was subjected to heat-sensitivity test procedures for thermal recording, and for the resistance thereof to curling, in the following manner.

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(1) Thermal recording sensitivity

The heat-sensitive color-forming layer of the recording sheet was locally heated by using a heat inclination tester (available from Toyo Seiki Co.) at a temperature of 120°C under a pressure of 2.5 kg/cm² for 100 m seconds. The color density of the resultant colored image was measured by a color density tester (available under a trademark of Macbeth Densitometer Tester RD-914, from Kollmorgen Co.).

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The recording sensitivity of the recording sheet was represented by the measured value of the color darkness. Preferably, the measured darkness was 1.20 or more.

(2) Resistance to curling

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An A4-size test piece was prepared from the recording sheet in such a manner that the longitudinal side of the test piece was in parallel to the longitudinal direction of the recording sheet.

The test piece was placed on a horizontal plate in such a manner that the heat-sensitive color-forming layer faced upward and left to stand under the conditions as shown in Table 1 for 10 minutes, to allow the test piece to freely curl.

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The results of the tests are indicated in Table 1.

When placed in a dry, cool atmosphere at a temperature of 10°C and at a relative humidity (RH) of 20%, the test piece was curled outward so that the substrate sheet formed an inside surface of the curled test piece.

When placed in a wet, hot atmosphere at a temperature of 35°C and at a relative humidity of 85%, the test piece was curled inward so that the heat-sensitive color-forming layer formed an inside face of the curled test piece.

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Comparative Example 1

The same procedures as those mentioned in Example 1 were carried out except that the dry NBKP and the dry LBKP were beaten to a freeness (CSF) of 230 ml.

The results of the tests are shown in Table 1.

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Comparative Example 2

5 The same procedures as in Example 2 were carried out except that the dry NBKP was replaced by 20 parts by weight of a wet NBKP, the dry LBKP was replaced by 80 parts by weight of a wet LBKP, and these wet pulps were beaten to a freeness (CSF) of 380 ml.

The results of tests are shown in Table 1.

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Table 1

Item	Example No.	Freeness (CSF) (ml)	Recording sensitivity	Curl formation	
				10°C 20%RH	35°C 85%RH
Example	1	300	1.26	Very slight	Very slight
	2	380	1.28	Very slight	Very slight
	3	460	1.32	Very slight	Very slight
Comparative Example	1	230	1.12	Significant	Significant
	2	380 (wet pulp)	1.09	Very significant in cylinder form	Very significant in cylinder form

Claims

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1. A heat-sensitive recording sheet comprising
a substrate sheet; and
a heat sensitive color-forming layer formed on at least one surface of the substrate sheet and comprising a substantially colorless dye precursor, a color-developing agent reactive with the dye precursor upon heating to develop a color, and a binder,
said substrate sheet consisting essentially of a paper sheet produced from a dry pulp beaten to a freeness of from 250 ml to 550 ml determined in accordance with the Canadian Standard Freeness (CSF) Test Method.
- 10 2. The heat-sensitive recording sheet as claimed in claim 1, wherein the beaten dry pulp has a freeness of from 300 ml to 500 ml.
- 15 3. The heat-sensitive recording sheet as claimed in claim 1, wherein the substrate sheet has a weight of from 30 to 200 g/m².
- 20 4. The heat-sensitive recording sheet as claimed in claim 1, wherein the substrate sheet contains an additive comprising at least one member selected from the group consisting of dry paper strength reinforcers, sizing agents, fillers, and wet paper strength reinforcers.

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Patentansprüche

1. Wärmeempfindliche Aufzeichnungsfolie, welche aufweist:
eine Substratfolie; und
eine wärmeempfindliche, farbbildende Schicht, welche auf mindestens einer Oberfläche der Substratfolie gebildet ist und einen im wesentlichen farblosen Farbstoffvorläufer, ein bei Erwärmung mit dem Farbstoffvorläufer reaktives Farbreaktionsmittel zur Entwicklung einer Farbe, sowie ein Bindemittel aufweist,
wobei die Substratfolie im wesentlichen aus einem Papierbogen besteht, welcher aus einer Trockenpulpe zu einem gemäß dem CSF (Canadian Standard Freeness)-Prüfverfahren festgestellten Entwässerungsgrad von 250 bis 550 ml geschlagen wurde.
- 30 2. Wärmeempfindliche Aufzeichnungsfolie nach Anspruch 1, wobei die geschlagene Trockenpulpe einen Entwässerungsgrad von 300 bis 500 ml aufweist.
- 40 3. Wärmeempfindliche Aufzeichnungsfolie nach Anspruch 1, wobei die Substratfolie ein Gewicht von 30 bis 200 g/m² aufweist.
- 45 4. Wärmeempfindliche Aufzeichnungsfolie nach Anspruch 1, wobei die Substratfolie einen Zusatz enthält, welcher mindestens ein Mitglied der aus Trockenpapier-Festigkeitsverstärkern, Schlichtemitteln, Füllmitteln und Feuchtpapier-Festigkeitsverstärkern bestehenden Gruppe umfaßt.

Revendications

- 50 1. Feuille de reproduction thermosensible comprenant :
une feuille de support ; et
une couche chromogène thermosensible formée sur au moins une face de la feuille de support et comprenant un précurseur de colorant pratiquement incolore, un agent développeur chromogène réagissant par chauffage avec le précurseur de colorant en formant une couleur et un liant,
ladite feuille de support consistant essentiellement en une feuille de papier produite à partir d'une
55 pâte sèche raffinée à un degré de raffinage de 250 à 550 ml déterminé selon la norme "Canadian Standard Freeness (CSF) Test Method".
2. Feuille de reproduction thermosensible selon la revendication 1, dans laquelle la pâte sèche raffinée a

un degré de raffinage de 300 à 500 ml.

5 3. Feuille de reproduction thermosensible selon la revendication 1, dans laquelle la feuille de support a un grammage de 30 à 200 g/m².

10 4. Feuille de reproduction thermosensible selon la revendication 1, dans laquelle la feuille de support contient un additif comprenant au moins un composant choisi parmi les renforçateurs de résistance du papier à sec, les agents d'encollage, les charges et les renforçateurs de résistance du papier à l'état hu-

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