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DESCRIPTION JPS60239596

[0001]

BACKGROUND OF THE INVENTION 1. Field of the Invention The present invention relates to a method for producing coated paper having novel performance. [Technical background] Paper coated paper coated with an aqueous coating material containing a pigment, an adhesive and a small amount of additives on the surface of a paper substrate can be applied to art paper, coated paper, cast Coated paper, etc., and most of them are used as high-class printing paper for pamphlets, calendar paper, book (journal) paper, packaging paper and paper materials. On the other hand, in many cases, these pigment coated papers are subjected to smoothing treatment using finishing equipment called super calendar, machine calender and thermal calendar by heating and pressurizing mechanisms, For the sake of convenience, it is classified according to the glossiness of the surface of the coating layer after finishing treatment (the ratio of the 75 ° incident light flux to the 75 ° reflection light flux), for example, a cross tone coated paper with a glossiness degree of 55 or more as a medium gloss coated paper, 40 to 55% as a mid- Dubbed paper, 20 to 40 diesel coated paper and 20 or less matte finish coated paper etc, can be used selectively according to the taste of customers. As a matter of course, the pigment coated paper to be used as a printing material in the printing process as described above is one which is sufficiently imparted with both workability at the time of printing and printing surface quality after printing, that is, printing suitability In recent years, the market demand for print quality, in particular, has advanced and diversified in recent years. OBJECTS OF THE INVENTION It is an object of the present invention to provide a coated paper having new functions in order to respond to high quality requirements from the market. That is, the glossiness (hereinafter

abbreviated as white paper glossiness) of the formed coating layer is at a low level of Matdal Dalton or Middle Gloss, but the glossiness of the printed surface after printing (hereinafter abbreviated as printing gloss) is , To provide a coated paper which is in the same level as the cross-tone coated paper, has a high contrast of the non-image portion of low blank paper glossiness and the image portion of high printing glossiness and high resolution It is in.

[Constitution of the Invention] The present invention provides a paint having a surface property with a glossiness of 50% or more and containing 40% by weight or more of calcium carbonate pigment having a cL of 1 to 1.0 μm based on all pigments in the paint, / - or more. The surface of the final coating layer formed by the coating film formed by single step coating of pigment coated paper or multistage coating is coated on the surface of an acid or acidic film

Characterized in that the pigment coated paper is modified with a neutral salt. In the past, much effort has been made to respond to sophistication of quality requirements for pigment coated papers on the market. For example, as shown in JP-B-59-9680 and JP-A-59-43193, functional impartation to paint constituting materials for forming a coating layer, glossy in JP-B-59-3597, JP-B-59-3598 Many efforts are still being made, such as those concerning paint composition conditions.

However, in order to satisfy the relationship between the blank paper gloss and the printing gloss which can be seen as contrary to the present invention, it is impossible to make this possible only by these applications, and an innovative idea It is necessary to pick up. Actually, the inventors of the present invention have applied to tens of species in a wide range of blank paper glossiness ranging from matt finish coat paper to cross tone paint paper to cast coat paper to be also called super cross tone, and commercially available coated paper As a result of evaluating the printing glossiness of the paper, the white paper glossiness and the printing glossiness showed a high correlation to each other, and the coated paper or the coated paper close thereto which can express the intended low white paper gloss - high printing glossiness I could not find out as one. Therefore, in order to overcome the balance between the blank paper glossiness and the printing glossiness, the inventors have investigated the individual factors affecting each of them, that is, the ultra microscopic roughness with the width of the coated layer of 00 to 10 μm , the fine The visual roughness, the macroscopic roughness which appears with the roughness of 100 μm or more, the physical properties such as the size and distribution of the pores, the microscopic interface state of the surface layer, and the chemical properties such as lipophilicity and hydrophilicity We investigated the causal relationships of these in detail. Then, it was found that the blank paper glossiness and the printing glossiness are not always influenced by the same factors, and there is a possibility that the equilibrium of both can be lost. Accordingly, several coating films presumed to be able to exhibit low blank paper glossiness-high printing glossiness are presumed, and one of them is a necessary condition for making the white paper glossiness to matsutdal style, particle size 10 to 100 In order to maintain the microscopic roughness on the order of pm width, to suppress excessive penetration of the ink component into the inside of the coating layer, and to improve the maintainability and continuity of the ink film, an ultra

microscopic As a result of intensive search and study on a method for forming a coating layer capable of reducing roughness, the present invention has been reached. The method of the present invention achieves the object by secondary chemical reforming treatment of the coating layer surface once formed as described in the claims. The base paper before the reforming treatment used in the method of the present invention may be either single stage coating or multistage coating, but the coating amount of the final coated layer in the single stage coating layer or multi-stage coating is at least 5 g / m² in absolute dry weight and in general, all the pigments of the printing coated paper occupy 70 to 80 (weight ratio) of the total solid content in the paint, but the particle size it is necessary that 40 to 100 wt% (preferably 60 to 80 wt%) of calcium carbonate pigment of α 1 to $10 \mu\text{m}$ (preferably α 2 to $7 \mu\text{m}$) is contained. After forming the coating layer, the base paper must be provided with smoothness of 55 or more in finishing equipment such as a super calendar.

If the final coated layer in the single-stage coated layer or multistage coating is $17 \mu\text{m}$ or less, internal penetration of the reforming liquid becomes remarkable), which tends to cause unevenness of the modified coating layer, If calcium carbonate rich in reactivity with the reforming solution, that is, calcium carbonate having a particle size α 1 to $1.0 \mu\text{m}$ falls downward by 40 weights, it is difficult to lower the blank paper gloss to the target level after the reforming treatment. Become. In addition, even when the particle diameter of calcium carbonate decreases beyond the above-mentioned range, it is difficult to lower the blank paper gloss, and when extremely coarse calcium carbonate is used, or when the base paper When the smoothness of the pigment coated paper has not reached the above-mentioned level trap, the surface of the coating layer after modification is excessively rough and the continuity of the ink film after printing deteriorates. A high printing glossiness can not be obtained. In the present invention, the composition of the base paper, the coating layer components other than the pigment, the coating method and the like are not subject to any restrictions. On the other hand, as the reforming solution, an aqueous solution of acid or acidic to neutral salt having reactivity with calcium carbonate such as zinc sulfate, aluminum sulfate, formic acid, calcium formate, sodium formate, calcium acetate or the like can be used, Strong acids such as hydrochloric acid and sulfuric acid are unlikely to be preferable from the viewpoint of work environment and adverse influence on the strength etc. of the coating layer. The ammonium salt of the acid can also be used. Further, by changing the concentration of the aqueous solution, the blank paper glossiness can be set to an arbitrary level, but the level of the concentration differs depending on each processing solution. Acids and salts in the method of the present invention clog an ultra microscopic pore of $10 \mu\text{m}$ or less on the surface of the coating layer to suppress the internal penetration of the ink component and keep good coverage of the ink coating, Ink transfer and dampening water transfer and the like in offset printing or the like tend to be somewhat lower than the coated layer before processing. However, these coated papers adequately comply with beef, offset printing and the like at levels comparable to commercially available coated papers. Regarding the method of surface modification, there are a method of immersing the coating layer in the

reforming liquid, a method of coating an excess amount of the reforming liquid and then scraping off with a Rondo or air knife or the like, etc. Either of these methods I do not care. A phenomenon may occur in which the surface of the coating layer modified by the above treatment liquid is excessively adhered to the surface of the coating layer or a fine powder presumed to be a reaction product with the treatment liquid component adheres and easily detaches. Therefore, in order to prevent such a phenomenon, it is preferable to blend an appropriate amount of a substance having a binder effect. As the binder, synthetic binder such as starch type, polyvinyl alcohol type and polyacrylamide can be used, but when a salt is used as a reforming liquid component, nonionic cationic substance which does not impair the activity of salt cation Must be selected.

Although the object of the present invention can be achieved by satisfying the above requirements, it is necessary to take countermeasures when bubbles are generated at the time of operation or to have a coloring function at the time of reforming. If there are, for example, various chemicals can be added to the reforming liquid, but also in this case, it is preferable to select the chemicals nonionic to cationic substances to be added. Next, the present invention will be described with reference to examples, but the present invention is not limited by the examples at all.

Example 1 A coating material having the following composition was applied to a felt surface of a raw paper of 80 g / m² of rice pine by a blade coater at a rate of 20 t / m² (absolute dry weight), subjected to a smoothing treatment with a super calendar, and a glossiness of the coated surface was made to 65 pieces.

Paint composition First grade kaolinite clay ... 30 parts Oxidized denatured starch 3 parts Styrene, butadiene latex 20 parts Polyoxycarboxylate 3 parts Epoxy resin 1 part

The surface of the above coated paper was coated with 1.5, 2.0 and 50% aluminum sulfate (as A & (SO₄)²⁻ 18 Hz O) and each quarter of polyvinyl alcohol. An aqueous solution was applied at a water content of 35 f / m² using a metering rod. As a result, as shown in Table 1, under each condition, midogloss, dull and matt coated paper (corresponding white paper glossiness was obtained. As a result of printing with this IR ink 3 printing machine (manufactured by Nichigo Seisakusho) using Toyo Ink SUPERAPEXNK (Red) 5c of L35wd, high printing gloss comparable to commercially available art paper was obtained. In addition, although the printability of the ground such as coated surface strength, moisture resistant water behavior, inking property, multicolor offset printing test, etc. were also evaluated, they were all at the same level as commercially available coated papers, sufficient offset printing. It was shown to be compatible with.

TABLE 1 COMPARATIVE EXAMPLE 1 The same base paper as in Example 1 was not subjected to a finish treatment or was subjected to a smoothing treatment with a super calender under a condition that the glossiness became 50% or less, and then under the same conditions as in Example 1. As a result of the reforming treatment, as shown in Table 2, although the blank paper glossiness decreased with the increase in the concentration of the reforming liquid, the printing glossiness also decreased at the same time, and the intended coated paper could not be obtained.

TABLE 2 COMPARATIVE EXAMPLE 2 Treatment was carried out in exactly the same manner as in Example 1 except that the paint composition of the base

paper was different, and as a result, as shown in Table 3, the reduction in blank paper gloss was very small. The printed glossiness of 'what can be reduced by increasing the concentration of the liquid' also decreased at the same time, and it was impossible to obtain the intended coated paper.

Coating Composition Primary kaolinite clay ... 75 parts 0 Other than the same as in Example 1

Table 6 Example 2 The same base paper surface as in Example 1 was coated with 15.20 and 25 th formic acid aqueous solution As a result of using as a reforming solution, as shown in Table 4, a white paper glossiness equivalent to a mid-gloss, a dull and a matt finish coated paper was obtained, and the printing glossiness was also at a high level comparable to commercially available art paper. In addition, other printing suitability such as coated surface strength, moisture resistant water behavior, inking property and other properties were also good and sufficient for offset printing.

Table 4 Example 3 Secondary kaolinite clay ... 40 parts - Class kaolinite clay ... 25 parts oxidized denatured starch ... on the felt side of the same base paper as in Example 1 5 parts Styrene butadiene latex - - - 18 parts Sodium polyphosphate ... 2 parts Epoxy resin ... 1 part of paint is applied by a blade coater to a jacket coated with a base coat of j 515 f / m "(bone dry weight) The paint of Example 1 was coated thereon with a metering rod of 10 f / gauge 3 (bone dry coat weight), and the same operation as in the examples was carried out. As a result, as shown in Table 5, a white paper glossiness equivalent to a mid-gloss, a dull and a matt finish coated paper was obtained, and the printing glossiness was also a high level comparable to commercially available art paper. In addition, we also evaluated the print suitability of coated surface strength, moisture resistance behavior, inking property, etc., but they were all at the same level as those of commercial coated paper and were shown to be sufficient for offset printing.

TABLE 5 Example 4 Surface property of the base paper obtained in Example 1 was changed to a range of about 30 to 80 in terms of a super calendar value, and aluminum sulfate having a 2.5 t concentration The reforming treatment was carried out using a quarter amount of polyvinyl alcohol-containing reforming solution. As a result, despite the glossiness of the base paper and the gloss of the base paper, whichever the glossiness of the base paper is, the target level can be obtained for the white paper glossiness, but the targeted high printing glossiness is such that the glossiness of the base paper is 5 parts Only conditions that were above were obtained.

TABLE 6 Example 5 Additive other than pigment on the surface of the base paper of Example 1 is under the same conditions as above but the pigment composition is changed to primary kaolinite clay / calcium carbonate ratio = 0/100 to 1 10 , Absolute dry weight 2097 m ", and finished to a glossiness of 60% by a super calendar, and the same treatment as in Example 4 was carried out. As a result, it was possible to reduce the blank paper gloss to the desired dull tone only under the condition that calcium carbonate in Table 7 occupies 4 parts or more of all pigments.

Table 7 In addition to the above examples, the present inventors also conducted experiments on

the coating amount of the base paper and the particle diameter circle of calcium carbonate in the base paper coating film. Regarding the coating amount of the base paper, when it reaches 5 f / m "or less as absolute dry weight, the surface of the coating film after modification is not very uniform and is not worth evaluating. Further, when the particle diameter of the calcium carbonate pigment is smaller than the claimed range (α 1 to 1.0 μ m), the coating film of the base paper is remarkably densified, the reactivity with the reforming liquid is deteriorated, and the white paper glossiness It could not be reduced to the target level. On the contrary, when using this coarse calcium carbonate, extremely gloss appears at the stage of flattening the base paper <<, when finishing conditions are drastically strengthened and finished to the desired gloss level, The porosity of the base paper coating film was lost as described above, and the reaction with the reforming liquid was insufficient. Principal Applicant Oji Paper Co., Ltd. Agent Hiroo Inou Akira Yoshimitsu Kimitsu Kimitsu (spontaneous) June 26, Showa 59 Judge of the Patent Agency Shiga Kagaku 1, Display of the case Showa 59 Patent application No. 94621 2, Production method of pigment coated paper 5 Relationship with a case of correction person Patent applicant address Chuo-ku, Chuo-ku, Ginza 4 - chome 7, 5 name Name Oji Paper Co., Ltd. representative Sea turtle two copies & columns of claims of correction subject matter and columns of detailed description of the invention 1 Content of amendment (1) Correct the claims as shown in the attached sheet. (2) Correct "[L 1 to 1, 0 μ in " for all pigments on page 3, line 16 of the specification as "with average pigment particle diameter α 1 to 1.0 μ m for all pigments". (3) "Particle diameter" on page 6, line 14 of the same is corrected as "average particle diameter".

Λ Claim 1, having a surface property with a glossiness of 50% or more, and having an average particle diameter of 0.1 to 1. A coating film formed by single stage coating of a pigment coated paper coated with a paint containing 40% by weight or more of calcium carbonate pigment of OIIm so as to have a ratio of absolute dry weight of 5 f / m 2 or more or by a multistage coating A method for producing a pigment coated paper characterized by modifying the surface of the formed final coated layer with an acid or an acidic or neutral salt.