KCC (Singapore) Pte Ltd v Anti Corrosion Pte Ltd
[2001] SGHC 133

Case Number : Suit 773/2000
Decision Date : 14 June 2001
Tribunal/Court : High Court
Coram : Tay Yong Kwang JC
Counsel Name(s) : Aqbal Singh (Chan Ng Aqbal) for the plaintiffs; Raymond Lye and Alvin Chang (Tay Lye & Ngaw Partnership) for the defendants
Parties : KCC (Singapore) Pte Ltd — Anti Corrosion Pte Ltd

JUDGMENT:

Grounds of Decision

1 The Plaintiffs, who are paint manufacturers, claimed $14,595.10 as the balance price of paint supplied to the Defendants. The Defendants initially denied the claim in their Defence and pleaded a Counterclaim for damages to be assessed caused by the Plaintiffs' defective external paint supplied for a painting project awarded to the Defendants. At the trial, however, the Defendants did not dispute the Plaintiffs' claim and the trial therefore centred on the allegations contained in the Counterclaim. It would therefore be convenient to deal with the Defendants' Counterclaim first.

THE DEFENDANTS' COUNTERCLAIM

2 The Defendants were awarded a contract to paint twelve blocks of factory buildings at Shun Li Industrial Park Phase 1 ("the project") by Eng Seng Lee Construction Co Pte Ltd ("ESL"), the main contractors.

3 By a Purchase Order dated 18 March 1998, the Defendants awarded the contract for the supply of external paint for the project to the Plaintiffs. It was an express and/or implied term of the agreement between the Defendants and the Plaintiffs that:

> (1) the external paint to be supplied must be of SS 345 standard (i.e. the Singapore Institute of Standards and Industrial Research ("SISIR") approved standard for external paint);
>
> (2) the said paint must be of satisfactory quality as external paint; and
>
> (3) it must be reasonably fit for use as external paint.

4 The agreed contract price for the Plaintiffs' paint was $86,962 of which $82,262.00 had been paid, leaving only a balance of $4,700 unpaid. The rest of the Plaintiffs' claim related to another of the Defendants' projects (at 35 Senoko Drive) and that invoice had been outstanding for more than two years.

5 The Defendants alleged that the paint supplied by the Plaintiffs was inherently defective as it suffered from severe fading about six months after application on the surfaces. In particular, the paint known as "Carnival Red" faded practically across the entire faade of the buildings. The "Fair Complexion" paint (of an "off-white" tone) also faded badly. As a result, the Defendants were required by the main contractors to repaint the external walls of the project.

6 During the trial, the Defendants were in the process of repainting the external walls of the project. They therefore counterclaimed for the supply of fresh paint, labour and material costs, loss of profits and costs incurred in hiring experts to conduct investigations into the paint supplied by the Plaintiffs.

7 Koh Soo Lip was the Building Manager of Sin Soon Lee Industrial Park Pte Ltd ("SSL"), the owners of the project, from

January 2000. He was on the site of the project everyday but was not there at the time of the original painting works.

8 He testified that in January and February 2000, there were at least ten complaints from the purchasers of the individual units in the project regarding the fading paintwork on the external walls. The fading was most apparent after the touch-up paintwork had been done at Block 263-301 which was facing the main road. The colour difference in the Carnival Red was so great that it appeared as if a completely different paint had been used for the touch-up paintwork when that was not the case. The Fair Complexion paint on the upper external walls had also changed in colour although that was not apparent when viewed from afar.

9 On 2 February 2000, Koh sent a letter to ESL, the main contractors, to ask them to make good the faded paintwork. A reminder was sent on 14 April 2000. He asked ESL to repaint all the affected external walls because the paint had faded badly and not because of any replastering works being carried out.

10 Repainting works by the Defendants started in June or July 2000 with the application of a base or sealer coat over the existing Carnival Red. Since the decision to repaint had been made, the owners of the project decided to do touch-up works on the plastering on some of the external walls of the other blocks as well to make them look smoother. Koh emphasized that SSL had not received any complaint about the external plastering works. At the time he requested ESL to repaint the external walls, only Block 263-301 had minor replastering works being done.

11 On or about 25 July 2000, Koh, on behalf of SSL, sent out a letter to the purchasers of the units to ask for their colour preference for the repainting works as the architects had decided that Carnival Red would be changed.

12 The Defendants were also the painters for Phase 2 of the development but no complaints were made there about the touch-up paintwork.

13 In cross-examination, Koh agreed that SSL (the owners) and ESL (the main contractors) were related companies with their registered offices at the same address. ESL was also the plasterer for the project. He was aware that the touch-up paintwork was done sometime in December 1999 and in January 2000. He disagreed with the suggestion that he had said that the replastering works were not substantial because ESL was related to SSL. He explained that the replastering was only in respect of cracklines. SSL had not made a claim against ESL in this matter. He disagreed that SSL and ESL were trying to make the Plaintiffs the scapegoat for the replastering works.

14 Koh explained that that was the first project undertaken by ESL for SSL. He did not treat ESL any better than other contractors. The extent of the replastering works was normal for building projects.

15 Mohd Yusof bin Mohd Said was the Project Planner (Research) of SSL. In August 1999, he was at the project site as the Property Executive (Management Department). He was there everyday. It was not obvious to him then that there was fading paintwork on any of the blocks in the project. The original paintworks had started about April 1998 and were completed around April or May 1999.

16 In November 1999, during the handover of Phase 2 of the project, he started noticing the fading paintwork on the external walls after a few purchasers who had moved in complained about the faded Carnival Red.

17 Around December 1999, minor replastering works on some cracks followed by touch-up repainting works were done at Block 263-301 because that block faced the main road and SSL wanted it to look good. No other blocks had touch-up replastering works done then.

18 After the touch-up repainting works had been carried out, it became obvious that there was a stark contrast in colour between the touch-up paintworks and the original paintworks, particularly where Carnival Red was concerned, so that it appeared as if there were two different colours or tones.

19 In March 2000, Mohd Yusof took some photographs of the colour difference in Carnival Red. At that time, no replastering

works had commenced on any of the other blocks. Some such works were carried out on the remaining blocks only after July 2000 when the decision to change the paint had already been made.

20 Mohd Yusof also agreed that SSL and ESL were related companies with different management and that ESL was the plasterer for the project. He disagreed however with the suggestion that he was downplaying the seriousness of the cracks because of this. He also disagreed that the touch-up patchwork was to make the paint fade seem very bad. SSL did not ask ESL to do the replastering. ESL had not handed over the project to SSL then.

21 Lim Chee Siong, the Assistant General Manager of ESL, testified that on or about 3 October 1997, ESL received a quotation from the Defendants for the internal and external painting works for the project. ESL accepted the quotation orally and the painting works commenced sometime in April 1998. They were completed by June 1999 when the project was handed over by ESL to SSL. The architect's Completion Certificate dated 14 June 1999 showed no delay or defective works on the part of the Defendants, save that some touch-up external painting works had to be done. There was also no complaint in that Certificate about the original plastering works.

22 He could not recall when the paintworks started to fade but ESL received complaints from SSL and was told it would have to rectify or make good the paint discolouration.

23 Some two or three months after the project was handed over, ESL and its subcontractors were asked to carry out minor rectification works, including replastering. After those works were completed, the Defendants were asked to do touch-up painting at the affected areas.

24 By that time, it was obvious that the paint colours had changed significantly. The Carnival Red had faded to a purplish colour and the Fair Complexion to a barley white colour. ESL, upon complaints received from SSL, then verbally informed the Defendants to repaint the entire project.

25 On 15 March 2000, ESL wrote to the Defendants "on the colour of the external faade of the building which has faded especially the Carnival Red colour", expressing surprise that the colour had faded to that extent within such a short period and requiring the Defendants to make good the painting works by the end of May 2000. Reminders were subsequently sent to the Defendants on 18 April 2000 and 7 June 2000.

26 On 14 June 2000, the Defendants wrote to ESL to ask for an extension of the deadline as they were "still waiting for the feedback from our paint manufacturer". An extension was verbally granted by ESL.

27 In early July 2000, the Defendants commenced the repainting works. The deadline for completion was December 2000 but that had to be extended because the purchasers of the units had begun moving in from September 1999, hampering the progress of the repainting works.

28 In October or November 2000, ESL was instructed to change Carnival Red to Sky Blue. On 25 November 2000, ESL informed the Defendants accordingly. The repainting works were scheduled to be completed by February 2001.

29 Lim Chee Siong clarified under cross-examination that the subcontractor which actually did the plastering work was Nian Chuan Construction. ESL would also do some touch-up replastering works if the cracks in question could not be attributed to Nian Chuan Construction. The touch-up replastering works before the repainting were done out of goodwill since it had been decided that repainting was necessary.

30 External painting works would usually be done only two or three months before the completion of the project or, at most, six months before completion. The complaint about the colour tone difference related basically to Carnival Red because it was a stronger colour and hence more obvious. The Fair Complexion, which had turned "more to white", was a lighter colour and the difference was therefore not as obvious.

31 Lim Chee Siong disagreed with the suggestion that some sort of deal had been struck among SSL, ESL and the Defendants whereby the Defendants agreed to repaint all the external walls at the expense of the Plaintiffs.

32 Lim Kah Khim was the Defendants' supervisor. He was at the site everyday during the painting works. His duties included the supervision of the painting works, ordering of paint through the Defendants' office and accepting delivery of the same. He took instructions from Vincent Lim Choon Lin, the Defendants' Managing Director.

33 Lim Kah Khim testified that he knew that the painting contract specified that four coats of paint had to be applied on the external walls – one coat of sealer, one texture coat and two finishing coats. The original painting works proceeded smoothly and were completed by June 1999.

34 In late 1999, while doing touch-up paintworks, it became apparent to Lim that the original paint had faded badly. In particular, the Carnival Red had become a purple hue and the Fair Complexion had faded to become almost white. He had never come across such a bad case of fading paint in all his years of experience.

35 In early January 2000, he was told by one of the ESL's site supervisors that the Defendants would have to repaint the external walls of the entire project. He informed Vincent Lim accordingly.

36 In early July 2000, he was instructed by Vincent Lim to commence the repainting works. He instructed his workers to prepare the external walls by applying the first coat of paint sealer. For the repainting works, they did not use the Plaintiffs' paint. They used Jotun paint. In late November 2000, Vincent Lim instructed him to do the two finishing coats using Sky Blue paint instead of Carnival Red. The Fair Complexion colour was retained in the repainting works. Work was still going on as at January 2001.

37 Lim Kah Khim was asked whether he kept any record books on site as to what was done with each batch of paint that arrived there. He said that he did not keep any but he believed there would be some record in the Defendants' office. He also did not keep record of when each coat was applied.

38 When they completed the original works in May 1999, they kept two spare 20-litre tins of each paint for touch-up works. The original painting was not done during the night. There was no dilution of the paints with water.

39 Asked whether the touch-up works would look better if he had touched up the entire panel of external wall, Lim replied that they would paint along the touch-up lines only and not the entire panel.

40 Vincent Lim Choon Lin, the Managing Director, testified that the Defendants specialized in painting works at construction projects. In mid-1997, he became aware of the project in question and wanted to submit a tender for the painting works. Before he did so, he approached the Plaintiffs for a quotation for the supply of internal and external paint. He met the Plaintiffs' sales executives, Robin Tay and Polly Chong, at their office in late 1997.

41 Vincent Lim told Robin that the Defendants required external paint of SS 345 standard and asked whether the Plaintiffs had paint with such certification from the Productivity and Standards Board ("PSB"). Robin assured him that "the Plaintiffs were certified" and showed him some documents and test reports evidencing this.

42 Vincent knew that the PSB only certified specific paint colours submitted for testing and that a fee was charged for every paint colour. Most paint manufacturers and suppliers in Singapore would not submit all their available paint colours (which could number several hundred) for testing and certification as it would not be economical to do so. Vincent therefore asked Robin what would happen if the paint colours specified for the project were not on the Plaintiffs' list of SS 345 certified paints. Robin assured him that the Plaintiffs would then submit those paint colours for testing and certification.

43 Robin subsequently quoted $70 plus for a 20-litre drum of external paint. Since that price was lower than that of other suppliers, Vincent verbally accepted it. He then sent his quotation to ESL for both the internal and external painting works on 3 October 1997. The Plaintiffs' written quotation dated 23 March 1998 was subsequently given to the Defendants.

44 The Defendants did not proceed with their order for internal paint from the Plaintiffs as there was no subsequent agreement on the price. The Plaintiffs therefore supplied only external paint to the Defendants.

45 On 6 March 1998, the Defendants wrote to the Plaintiffs to ask for confirmation of a five-year warranty on the Plaintiffs' external paint (described as Korever SS 345) as the Defendants were about to commence painting. On 10 March 1998, the Plaintiffs sent a letter direct to SSL (the owners of the project) stating that if the Defendants were awarded the contract for the external painting works, the Plaintiffs would provide a guarantee against defects for five years from the date of completion of the said works, noting also "that the painting/coating system shall comply with the requirement as specified in your contract".

46 The Defendants commenced painting shortly thereafter and completed it in May 1999. Vincent was on site at least twice a week to monitor the progress of the works with Lim Kah Khim, the supervisor, reporting directly to him.

47 On 30 August 1999, Vincent wrote to the Plaintiffs to ask for their letter of warranty for the project. After some minor disagreement over the form of the warranty and the payment of outstanding sums by the Defendants, the Plaintiffs finally faxed their warranty to the Defendants on 17 November 1999.

48 In late 1999 or early 2000, Vincent was verbally informed by ESL (the main contractors) that the paint had discoloured badly and the Defendants would have to repaint the entire project with another type of paint. This was followed by ESL's letters dated 15 March 2000, 18 April 2000 and 7 June 2000. Vincent went to the project site and it was very clear to him that the paint colours had faded. The Carnival Red had turned purple and the Fair Complexion had become almost white. The discolouration was apparent for all the buildings in the project.

49 Vincent wrote to the Plaintiffs on 21 March 2000 asking that they send a technician to the project site and explain in writing the reason for the fading, especially of the Carnival Red. No reply came. On 3 April 2000, he wrote a reminder marked "Urgent" to the Plaintiffs. When there was still no response from the Plaintiffs, he followed up with further letters dated 20 April 2000 and 8 June 2000.

50 Vincent then decided to seek expert opinion on the cause of discolouration. He instructed Setsco Services Pte Ltd for this purpose. A team from Setsco went to the project site in April or May 2000 to collect samples of the painting works for testing.

51 In early July 2000, the repainting works commenced. Vincent instructed his workers to strip and clean the external surface walls and apply the sealer coat. He sought quotations from other paint suppliers and decided on Jotun paint. In November 2000, ESL informed him to proceed with the painting of the two finishing coats in Sky Blue instead of Carnival Red. The Fair Complexion colour for the upper portions of the buildings was retained.

52 In cross-examination, Vincent agreed that he had ordered Velvet Maroon and Fair Complexion paints in April 1998 to do a mock-up of the paintworks. He could not tell how much of these paints was left after doing the mock-up. He also ordered 1000 litres of Blue Glow paint which was used for the walls underneath the overhang and for the interior such as the passageways and the lift lobbies, although this paint was one grade higher in quality than that specified in the agreement with ESL.

53 Blue Glow paint was cheaper than Carnival Red. It was put to Vincent that the Defendants had mixed all or some of the 1000 litres of Blue Glow with the Carnival Red in order to cut costs. If all of the 1000 litres of Blue Glow were used to mix with the Carnival Red, the Defendants would be able to save about $1,200. It was then suggested to him that the mixture started discolouring at different rates because Carnival Red would fade faster than a light colour like Blue Glow and after six months to two years, the areas painted with the mixture would fade to give a light purple tone. Vincent's rhetorical reply was, "What is the point of mixing them up? I would have headache if eventually I have to do some touch-up". He also denied that the Defendants had mixed the five cans of Velvet Maroon with the Carnival Red. According to Vincent, they had never mixed paints before in their painting works.

54 It was further suggested to Vincent that the Defendants' lack of records as to what they had done with the paints ordered was their way of blindfolding the Plaintiffs as to how the paints were used. Vincent maintained that there was no need for such

records – they simply bought and used the paint. They did not dilute the paint.

55 Vincent was under the impression all along that the WP 345 paint (the Plaintiffs' code) supplied by the Plaintiffs was SS 345 paint. He did not pay attention to the fact that none of the hundreds of cans of paint supplied by the Plaintiffs bore the SISIR mark. He was only interested in knowing whether the Plaintiffs' paint was SS 345 certified and not whether it was the Korever (which was so certified) or Korevon brand of paint (which was not). He had been buying at $96 per can (for certified paint) and not at the cheaper price of $86 per can (for uncertified paint). His subsequent purchase orders did not mention Korever SS 345 but Korevon WP 345 as he had thought that was the Plaintiffs' internal code for SS 345.

56 Asked whether it would take about eight months to have a paint tested and certified, Vincent said it should take three to six months only from his previous experience. If a paint manufacturer did not have the certification for a particular paint colour, it was accepted industry practice for the Defendants to use it first and let the manufacturer send it for certification later. The Defendants did not write to ask for the Plaintiffs' confirmation that they had sent the paint supplied for certification because the Plaintiffs had promised that they would do so and Vincent trusted them as they were a big company.

57 In April or May 2000, when Vincent was at the project site with the expert from Setsco, there was no replastering done except for the two blocks at the front. He denied the existence of any deal among SSL, ESL and the Defendants to push the blame to the Plaintiffs.

58 He had refused to pay up the $9,548 owed to the Plaintiffs for paint supplied in another project as he wanted to withhold as much money as possible in order that the Plaintiffs would give him the warranty sought.

59 Vincent acknowledged that it was possible that his workers could have painted more than the requisite four coats of paint in some areas while painting only three coats in others. However, if there was only one finishing coat instead of two, it would have been obvious to the architect and the owners of the project.

60 In re-examination, Vincent explained that he had used the better quality Blue Glow for the internal paintworks although a lower quality (SS 150) was specified as there were certain parts of the corridor which were exposed to the weather. The price difference for the entire project as a result of this was only about $600.

61 This was the first time the Defendants had dealt with the Plaintiffs. Vincent was convinced by Robin Tay (of the Plaintiffs) that there would not be any problem if the specified paint colour had not yet been certified. In any event, he had been paying $96 per can for Carnival Red, which was the price for SS 345 paint, and not $86 for uncertified paint. When the Plaintiffs supplied their WP 345 paint, they did not indicate that a discount would be given because it was not SS 345 paint. Therefore when Vincent received the invoices stating $96 per can for Carnival Red paint, he understood WP 345 to mean SS 345. Velvet Maroon paint cost $86 per can. He did not order any more Velvet Maroon after the mock-up.

62 Elizabeth Lee, a Division Manager of Setsco Services Pte Ltd, was the expert engaged to investigate the cause of the discolouration of the external paintworks. She graduated from the National University of Singapore in 1993 with a Bachelor of Science degree in Chemistry and Biochemistry and in 1999 with a Master of Science degree in Environmental Engineering. She had over seven years' experience in carrying out specialist paint tests.

63 She and her team took three samples of Carnival Red paint and two samples of Fair Complexion paint from the external paint works at the project. She stated in her affidavit of evidence in chief as follows (referring to her report dated 6 June 2000 as the "Test Report"):

> "7. Three tests were carried out on the samples S1 to S5 taken from the site at Kaki Bukit Phase 1. These are the X-ray Dispersive Energy Florescence ("XRF") test, the Thermal Gravimetric Analysis ("TGA") test and the Scanning Electron Microscope – Energy Dispersive X-ray Analysis ("SEM-EDX") test. I shall comment generally on each of these tests below.

8. The XRF test is used to evaluate on a semi-quantitative basis, the relative weight of each element contained in the dry paint samples S1 to S5 taken from the site. This will give an accurate indication of the relative amount (in percentage terms) of each chemical compound contained in the paint sample. The results of this test on each sample S1 to S5 are contained at Table 1 at page 4 of the Test Report.

9. The TGA test is used to determine the composition of the bedding layer, or what is usually referred to as the plaster layer, of the paint samples S1 to S5. The results of this test on each sample S1 to S5 are contained at Table 2 at page 5 of the Test Report. These results did not significantly affect the conclusion drawn in the Test Report as the bedding layer was determined to be the usual plaster used in most local construction projects.

10. The SEM-EDX test is used primarily to determine the number of layers present in a multiple layer paint sample, as is the case with the paint samples S1 to S5 in the present case. The SEM-EDX test is also used to identify the chemical composition of unknown structures within the paint samples taken. The results of this test on each sample S1 to S5 are found at pages 6 to 10 of the Test Report. The specific comments for each sample tested are found in the Test Report itself. It was also observed from these test results that the thickness of the paint applied on all the samples were greater than usually seen in most cases.

Method statements on the tests carried out

11. The collection of samples and preparation for testing:-

> The samples were collected on site by cutting the surface of the faade through to the plaster layer using a handheld cutter powered by electricity. The cutting terminates before the concrete layer. The choice of location of the samples taken were selected by myself randomly based on the experience of the investigation team.

12. XFR (sic) test procedure and accuracy of the test:-

> Only the surface of the paint layers were analysed using the XRF test. The XFR (sic) test is able to accurately measure the amount of elements of a particular sample to 0.01% accuracy. It is not suitable for analysis of compounds in the concentration of parts per billion (ppb) or parts per million (ppm). It is able to analyze only inorganic elements from sodium to uranium and not for organic analysis.

Conclusion

13. The conclusions which were drawn from the tests carried out are found at paragraph 8 of the Test Report, and I briefly restate the same as follows:-

a. The discoloration of paint was not caused by alkaline attack, as sealer coats were found on all samples taken. Further, the site inspection did not reveal any moisture related problems.

b. The number of coats of paint applied met the specifications as indicated by the Defendants and should not be the cause for the discoloration. Further, the thickness of the paint samples applied were found to be greater than usually seen in most cases.

c. From the analysis, the pigment distribution in the samples taken were found to be uneven. Further, the concentration of iron oxide pigment were found to be low in the samples taken. It was therefore deduced that both the paint systems used had very little UV resistance which probably caused the discoloration of the paint on site. In my opinion, the levels of iron oxide is much lower than that I have handled in other test of similar capacity in which the paint did not fade.

d. In my opinion and from my experience, the discoloration of the paint were consistent throughout the faade of the buildings which suggest probably poor paint quality rather than poor paint workmanship. If paint of similar quality was used for reinstatement, the paint would probably fade in a similar manner."

64 Elizabeth Lee said the five samples were taken from three blocks standing in a row in the project. She had asked the Defendants in April 2000 for some fresh paint but they were not able to provide it. There was a can of paint with about one quarter of its contents still inside but she did not accept that as a sample as the lid had not been properly secured. If she had fresh paint, she could have performed the QUV accelerated weathering test which would be the ideal test if the fresh paint and the paint in issue came from the same batch.

65 She agreed that if the Defendants had not applied the specified four coats, that could cause discolouration. However, there were other factors such as carbonation, alkaline attack and dilution of the paint.

66 Two of the Carnival Red samples showed five coats of paint had been applied. It was possible that touch-up paint had been applied to the original layers at the spots where those two samples were taken.

67 As for the two samples of Fair Complexion, only three coats of paint had been applied. Elizabeth Lee therefore agreed that her conclusion that the number of coats of paint met the specifications could apply only to the Carnival Red and not the Fair Complexion samples. One of the Fair Complexion samples was 25 microns thick while the other was 320 microns thick. She agreed that the painter could have applied too much paint for the latter sample. It could also have been some viscous material applied to small cracks that caused the thickness. However, the adhesion of the paint layers was good. The insufficient number of coats should not be a cause of fading where there was no evidence of alkaline attack or moisture on the paint. Colour fading was usually due to the pigments. The number of coats would affect opacity but not colour fading. The fact of colour fading implied that there was problem with the paint.

68 Effluorescence occurred when dissolved minerals flowed through a building onto the surface and then were deposited as fine crystals. Elizabeth Lee disagreed that effluorescence on the surface of the Carnival Red paintworks contributed to the

impression of discolouration. She maintained that the samples were not taken from areas of obvious cracks where there would be effluorescence. There was some effluorescence but she did not see huge cracks when she toured the project site. It was not a significant factor.

69 Elizabeth Lee maintained that the samples taken were sufficient for her tests. She did not take them from areas where there was patch paintwork as that would affect her analysis.

THE PLAINTIFFS' CASE

70 Ong See Yee was an Assistant Chemist in the Quality Control Department of the Plaintiffs since April 1997. Her job involved testing of the paint which was manufactured before it was poured into paint cans. The Plaintiffs had obtained ISO 9002 certification for paint manufacture and were very careful about quality control testing which involved the checking of the viscosity, the specific gravity, the fineness of grind, the determination of non-volatile content and the pH value of the product. The paint colour would also be checked using a Datacolor Colour Computer and also visually. All the batches of Carnival Red and of Fair Complexion paints had undergone and passed the quality control tests before they were poured into the paint cans for delivery.

71 The quality control tests did not check the weathering properties or the pigments in the paint. 500 c.c of each batch would be taken at random for testing.

72 Seo In Cheol, the Operation General Manager of the Plaintiffs' Production Department, was an industrial chemist. He joined the Plaintiffs in October 1993 but had been involved in paint manufacture since 1986. His duties were to oversee the manufacture and the quality control of the Plaintiffs' paints.

73 The Plaintiffs obtained ISO 9002 certification on 11 July 1996. In order to do that, the Plaintiffs had to show they had in place a system that produced paint of consistently good quality and that the system was strictly enforced.

74 When an order for paint came, he would issue batch cards (worksheets with information) for manufacturing the paint according to the formulas. The Production Manager would then proceed to manufacture according to the Plaintiffs' procedure. The product would then be adjusted for colour and viscosity and samples thereof would be sent for quality control testing. When the paint was shown to conform to specifications, it would be filtered and poured into containers for delivery to the customers.

75 Where the Carnival Red and the Fair Complexion paints were concerned, he prepared the batch cards for production according to the secret formulas prepared and approved by the Research and Development Department of the Plaintiffs' parent company in Korea. He checked all the completed batch cards daily to ensure that all the raw materials used were correct and the test results were within specifications. He confirmed that Rutile Titanium Dioxide, Clay, Barium Metaborate, Iron Oxide Red, Iron Oxide Yellow, Carbon Black, Unisperse DPP Red BO and 100% pure Acrylic Resin which were of excellent weather resistance had been used in the manufacture of these two paints.

76 Seo confirmed that the Carnival Red and the Fair Complexion supplied to the Defendants were produced and used for the first time in Singapore. The two colours were not certified under SS 345. However, the Plaintiffs had produced paints of similar colours before. He was not sure whether these paints had been produced in Korea before.

77 It was possible for the formula of a paint to have minor changes in ingredients while it was still being used in a particular project. However, the total quality would still be the same. Changes could be made to upgrade the paint or to lower the costs of production. That did not mean that cheaper ingredients were used. It could be the same ingredients ordered from other suppliers at cheaper rates.

78 Asked why the Visible Quality Card for Fair Complexion showed "TA 03" as the formula number for the four batches of paint between April and August 1998 and "TA 04" for the next five batches between October 1998 and April 1999, Seo explained that there was no change in the formula of the paint. The ingredients were the same. The only changes were in the specifications – the specific gravity, the viscosity and the range for pH had been changed. The changes were made by the Plaintiffs' parent company. Seo believed that the reason was to make the specifications fall within a narrower range. The three specifications changed would not affect the final outcome of the product but quality control would be tightened.

79 As for the elements which he said were used in the two paints, he knew that they were weather resistant but did not know whether the proportions in which they were mixed would affect their weather resistance.

80 Yoo Chul Hee, the Deputy General Manager of the Plaintiffs' Research and Development Department, graduated from Konkuk University, Korea, with a degree in Chemistry in 1986. He made four visits to the project site on 22 June 2000, 4, 5 and 19 July 2000, spending more than 15 hours carefully studying the paintwork on each of the twelve blocks there.

81 The overall appearance of the areas painted with Carnival Red was uniform. There were partially uneven colours on some of the surfaces especially where there was patch paint applied and at the overhang of some blocks which were exposed to strong sunlight. There was extensive cracking on the surface of the walls. Attempts had been made to cover the cracks with paint, a process called "patch painting". Some of the patch paint used was Carnival Red but significant amounts of paint or paints of a different colour tone had also been used.

82 The Fair Complexion paint's colour tone was even throughout the twelve blocks. There was no discolouration of the Fair Complexion.

83 Making a comparison on the degree and nature of colour fade of the Carnival Red painted on the blocks with a "laboratory colour drawn down" of one of the paint batches, Yoo observed that the colour difference was minimal. The "laboratory colour drawn down" was a card on which a small quantity of paint had been applied before it was poured into cans. He did the same for the Fair Complexion and found no colour difference or fading.

84 During the site visits, he also attempted to determine if other factors associated with discolouration were present. He found no sign of chalking in all the twelve blocks. Chalking of dry paint was the condition in which the paint had lost most of its gloss and was coated with a layer of white chalk. Where pigment fading was concerned, the Plaintiffs had used pigments of high performance for colour stability and alkaline stability which were suitable for exterior weather resistance. He observed some effluorescence at four blocks on the side most exposed to sunlight which would accelerate water movement towards the surface as a result of evaporation. Where paint application was concerned, he found evidence of roller marks and poor opacity. He could even see the colour of the texture coat (the second of the four coats) because of the poor application skills of the painter.

85 At one location, the patch paint applied was of a colour glossier than the Plaintiffs' paint. Other blocks had patch paint of a tone darker than Carnival Red.

86 Yoo then proceeded to criticize Setsco's Test Report. Setsco's implied assumption that dry samples were a good indication of weather resistance was flawed because they would be contaminated with the substrate and the plaster. A wet sample of the paint would be necessary to test for weather resistance. The five samples were not sufficiently representative of the site. Further, Setsco's conclusion that the bedding layers were completely carbonated (i.e. not alkaline) was extremely questionable. Yoo conducted alkalinity tests on the wall surfaces of six blocks using universal indicator paper and found that the pH level was around 11.A pH level in excess of seven indicated alkalinity. All new buildings would take a few years to be fully carbonated, especially where there were cracking and water movement.

87 Where the Fair Complexion samples were concerned, Setsco's conclusion that the viscosity of the paint in the two samples differed significantly was inappropriate as they did not use wet samples. Their connection of viscosity to opacity was also too simplistic. The high viscosity in one of the two samples was consistent with a putty-like substance rather than paint and the patching work on the extensive cracks suggested that a combination of putty and/or plaster and/or various types of paints had

been used. The difference in the dry film thickness between the two samples also suggested poor painting skill or excessive dilution of the paint with water. Yoo maintained that the viscosity of the Plaintiffs' paints was consistent and met both the Plaintiffs' quality requirement and the SS 345 standard.

88 Similarly, Setsco's deduction that uneven distribution of pigment led to poor opacity was erroneous. If there was such uneven distribution, it would result in a colour difference when the paint was initially applied to the wall. The distribution of pigment was not a factor in ascertaining the weather resistance or opacity of the paint.

89 Carnival Red was a deep saturated colour and it was not possible to meet the target colour with only titanium dioxide and iron oxide. The Plaintiffs' Uniperse DPP Red BO was nearly ten times more expensive than the iron oxide pigment in any event and there could therefore be no suggestion of cost cutting.

90 Yoo had conducted QUV accelerated weathering test on the Carnival Red. After 500 hours, the colour draw down cards of all the paint batches supplied to the Defendants showed little difference in colour when compared with the initial Carnival Red. He made a replica of the Carnival Red paint using the actual batch card paint formulation and conducted the test for alkali resistance based on the method stipulated for SS 345. The test result met the specification of SS 345. With the replica of the Carnival Red, he also prepared various specimens for the Plaintiffs' expert to analyse.

91 Yoo concluded by saying that the overall appearance of the project was acceptable where the paints were concerned and that where there was discolouration in the Carnival Red, that was due to poor application technic, patches being painted over or excessive dilution of the paint.

92 In cross-examination, Yoo explained that he made the four visits to the project site on the instructions of Kelvin Kim Chang Kuk. He agreed that there was discolouration of the Carnival Red paint at the overhang on the sunny side of five blocks. There was no photograph showing that the texture coat could be seen as he could not focus the camera on the relevant spot because the distance was too short.

93 According to Yoo, the thickness of the layers of paint was a more important factor in discolouration than the number of layers. The number of layers would affect discolouration particularly if the layers were thin.

94 The QUV accelerated weathering tests were conducted in July and August 2000, more than two years after the paints in question had been manufactured. The methodology was to apply two coats of paint on a cement panel but in this case, the Plaintiffs used one coat applied on opacity paper. However, that was applied to the same thickness as two coats. It was not the prescribed methodology but it provided the Plaintiffs a relative comparison among the batches of paint. The different methodology used would not have any significant effect on the accuracy of the test in any event. The test simulated UV light that was much stronger than sunlight for 20 hours per day. There would then be four hours when water was sprayed automatically at intervals on the opacity cards to simulate rain. The opacity cards were not waterproof but they were taped with scotch tape on the reverse side to protect them against the water. The front had lacquer coating. The test lasted 500 hours or 21 days. It was suggested to Yoo that the test was not carried out as the opacity paper would not have lasted 21 days. Yoo disagreed and produced the four strips on which the test was done.

95 Although the two paints in question were manufactured in Singapore for the first time, the Plaintiffs did not conduct any tests on them because on-site tests for similar paints had already been done and the ingredients for the paints had been examined already for weather-resistance.

96 Kelvin Kim Chang Kuk, the Deputy General Manager of the Plaintiffs' Sales Department, testified that the Plaintiffs' parent company in Korea was incorporated in 1958 and was the largest paint manufacturer there. The Plaintiffs, the wholly owned subsidiary of the Korean company, commenced operations in Singapore in 1994. In 1999, the Plaintiffs produced 14 million litres of paint worth about $52 million. In 2000, the turnover was about $60 million and it was projected that 2001 would see a turnover of some $73 million. The Plaintiffs supplied paint to South East Asian countries as well as to India, South Africa and China. Since 1994, there was no complaint received about the Plaintiffs' paint quality.

97 Between April 1998 and April 1999, the Plaintiffs supplied some 37,000 litres of paint to the Defendants. The payment term for the project's external paint was 60 days after delivery but the Defendants never paid the Plaintiffs on time. The Defendants would make payment only about five months to more than one year after the due date. This was tolerated by the Plaintiffs for the sake of goodwill and in the hope that things would improve.

98 In September 1999, the Defendants asked the Plaintiffs for a letter of warranty. Although the Plaintiffs were not obliged to issue such a letter, they were prepared to consider the request because of goodwill. However, the Plaintiffs were aware that a discrepancy existed between the Defendants' estimated and actual consumption of paint and suspected that the Defendants did not use sufficient quantities for paint for the project. Since the Defendants were withholding payment, the Plaintiffs had no choice but to issue the letter of warranty.

99 However, the Defendants still did not pay the Plaintiffs the amounts owing and demanded another kind of warranty which would mean that the Plaintiffs were guaranteeing workmanship as well and that the Plaintiffs were not in a position to do.

100 Kelvin Kim was an inspector of paints for three years. He had trained and gained experience in surveying painting jobs. When the Defendants first raised their complaint on 21 March 2000 that the paint was fading, he went to inspect the project site on 13 July 2000 and 19 July 2000, spending about four hours there. For the Fair Complexion paint, he found no colour change at all. There were, however, a very large number of cracks on the walls. The horizontal overhang painted with Carnival Red had colour changes on some parts which constituted less than 10% of the whole surface area. This percentage would be surprising if there was any inherent defect in the Carnival Red paint. The vertical columns, also painted with Carnival Red, showed no colour change. There were however a few surfaces where there appeared to be uneven roller marks.

101 Kelvin Kim acknowledged he was not a paint technologist but even a visual survey would reveal that nothing was wrong with the paint. There were numerous cracks on the building surfaces which were very visible and unsightly. These cracks had to be repaired and painted over again. The Defendants did not order more paint to do this but started making complaints about fading in March 2000 after they were pressed for payment.

102 In July/August 2000, after the commencement of the present action, he noticed that the Defendants had started repainting the buildings with a totally different colour scheme. The cracks had been repaired around that period of time.

103 Kelvin Kim explained in cross-examination that he was with the Plaintiffs from 1995 until March 1998 when he returned to Korea. In January 2000, he returned to work for the Plaintiffs again. He did not know what Robin Tay might have said to the Defendants in 1998.

104 Light colour paint was cheaper than dark coloured paint because the price of pigment for the latter was higher. The Plaintiffs' Fair Complexion cost $72 per 20-litre can and the Carnival Red cost $96 per 20-litre can. The Plaintiffs' prices were much cheaper than other manufacturers' because the latter were quoting their prices for SS 345 paints. The Plaintiffs' WP 345 paints had not been certified by the PSB. He agreed that the Defendants' Purchase Order dated 18 March 1998 was for SS 345 paints.

105 Asked why there was no response from the Plaintiffs to the Defendants' letters from 21 March 2000 to 8 June 2000, Kelvin Kim said that in April 2000, he did ask one Paul, the Assistant Manager of the Sales Department, and Yoo Chul Hee to go to the project site. He was told by them that they had gone to the project site and had called Vincent Lim to meet them there for discussions. However, Vincent Lim did not show up despite many attempts by Paul to contact him.

106 Subsequently, he heard that there was something wrong with the paint application and that there was effluorescence. He then asked Paul to contact Vincent Lim again, in particular, to ask him to pay the outstanding amount owed to the Plaintiffs and to cooperate with each other.

107 He agreed that there was nothing in writing about the above visits and that he had not mentioned these facts in his affidavit of evidence-in-chief. That was his error but the matters stated by him in Court were true. Questioned further about why Yoo had

not mentioned any visits to the project site in April 2000, Kelvin Kim said Yoo must have forgotten. He disagreed with the Defendants' letters stating that the Plaintiffs had not responded thereto.

108 Kelvin Kim also stated that it was common practice for a painter to ask a manufacturer of paints for touch-up paint that would match the weathered original. The manufacturer would have to re-formulate the particular paint to match the weathered or faded original. The price would depend on the customer and the situation. It could be done but the Plaintiffs had never done so before.

109 The Plaintiffs had offered a different kind of paint from that ordered by the Defendants in their purchase order. The Plaintiffs supplied only Korevon WP 345 and not Korever SS 345 paint. The prices were different – the Defendants ordered paint costing $90 per 20 litres but the Plaintiffs offered paint costing $86 per 20 litres. The Defendants did not send any purchase order for Korever SS 345 after the one in March 1998 and neither did they ask for evidence of SS 345 certification.

110 Robin Tay and Polly Chong, the sales executives that Vincent Lim dealt with, were no longer working for the Plaintiffs. Kelvin Kim heard that Robin Tay was working in Malaysia but did not know where Polly Chong was presently working.

111 Stephen Anthony Jessup was the Plaintiffs' expert witness. He possessed a Bachelor of Science (Physics, Chemistry, Mathematics) from the University of Natal, South Africa, and had 30 years of experience in the paint manufacturing industry. He was a Paint Technologist by profession.

112 Jessup first went to the project site on 20 June 2000. He found the overall appearance of the project most consistent and the overall appearance of the Carnival Red and Fair Complexion paintwork uniform.

113 The most obvious visual blemishes were along Kaki Bukit Avenue 3 and scattered generally on the blocks at that end of the project on both Carnival Red and Fair Complexion painted walls where intensive crack repairs had been done. There was a mixture of quite contrasting patch colours seen for both paints. "Patch colours" meant the paint applied over crack repairs. There was no particular change of colour of the paint surrounding the generally horizontal plaster cracks. There were some glaring contrasts in the colour of the repainting relative to the original background. For Carnival Red, the contrast was much deeper and much bluer. For Fair Complexion, the contrast was minor although there were isolated patches of distinctly yellow contrast due to the use of an entirely different paint.

114 Older repair patches showed a distinctly brown tone in contrast to the Carnival Red. In one case, enamel paint in Carnival Red had been used. There was no obvious difference in Carnival Red colour between open exposed faces and protected undersides but there was slight whitening of the Carnival Red on the horizontal beams on the sunny side of the buildings. At the base of the wall sections, there were occasional instances of discolouration, brown in the case of Carnival Red, associated with water movement within the wall exiting at the bottom thereof.

115 There were isolated incidents of effluorescence at the base of the roof parapet as well as slight Fair Complexion colour change. This was proof of water movement within the wall.

116 Roller marks were seen on both coating colours, causing some non-uniformity in colour. There were cases where the top coat thickness barely covered the top of the texture coat, with this see-through appearance giving a brownish colour blemish to the Carnival Red. The uneven plastering on the walls also contributed to appearance defects.

117 Jessup also enclosed photographs taken by the Plaintiffs on 7 July 2000 in his affidavit of evidence-in-chief.

118 He conducted two more site surveys on 19 and 29 July 2000. He took photographs of the site on 19 July 2000. His comparison tests showed that the colour fade for Carnival Red over twelve months of weathering was characterized by a distinctly bluer tone with a slightly milky appearance. The colour fade was consistent for all Carnival Red painted surfaces with no significant variations in the degree of fade. The degree of fade was normal for a deep saturated colour such as Carnival Red. The aesthetic appearance was well preserved.

119 A colour difference showed on approximately 25% of the columns. It appeared as a deeper and bluer colour on the upper one-third of the column across a paint roller boundary relative to the lower two-thirds of the column where it was redder. The upper one-third was of the same colour as the beam above it.

120 The paint coating examined across the roller boundary showed that the deeper colour was associated with greater coating thickness and the lighter with lower thickness. The colour variation in the columns was entirely a function of the roller application.

121 There were minor incidents of patch repairs which were redder than the surrounding. By colour comparison to the reference materials supplied by the Plaintiffs, it was deduced that the patch was applied sometime after the original work.

122 There were also some patches associated with crack repairs which were obviously darker and bluer than the original paintwork. Jessup deduced that the paint used was of a different pigmentation and was not the same as the original.

123 If the Carnival Red was diluted with water, 30% dilution would produce a just perceptible redder tone at full opacity. There was no perceptible colour difference using the undiluted paint as a patch. Dilution therefore did not affect colour so long as there was sufficient paint thickness to cover the surface.

124 Both the Carnival Red and the Fair Complexion displayed alkali resistance at cracks and effluorescence.

125 In Jessup's opinion, the overall appearance of the painted walls was most satisfactory with good colour uniformity. The slight variation in colour of the Carnival Red was normal for deep saturated colours. It was uniform and certainly without patchiness. Colour variations were confined to repair patching where, in part, alternative materials had been used and to roller application.

126 Commenting on the Setsco Test Report, Jessup felt that without a proper reference as the standard, in terms of colour and composition, the results were meaningless. As competent specialists, Setsco should have known that if the pigments discovered and argued about (titanium dioxide and iron oxide) had been mixed together, the result would be a pastel pink colour vastly different from the Carnival Red.

127 Where the thickness anomaly between the two samples of Fair Complexion was concerned, Setsco should have said that the painters applied too little paint in one and far too much in the other. Setsco compared the proportion of iron oxide and titanium dioxide colour pigments to calcium carbonate extender and said that it was too low without stating what it should be for colour stability. Calcium carbonate was not just to reduce costs. Filler pigments had many other contributions to the structure and durability of a paint film.

128 If Setsco had collected a sufficiently large number of samples, they would have discovered a natural variance, i.e. the compositional and structural variance of random paint samples which the accuracy of the test methods was capable of analysing.

129 The choice of colour pigments in the Plaintiffs' formulation was good. The pigments were of premium exterior durability grades. Setsco's conclusion that the formulation was poor was a highly speculative one. The location where the samples were taken and the reason for taking them had to be stated in order to clearly link them to the statement that discolouration was rampant. Setsco's conclusion that the Plaintiffs' paint formulations were wrong was not part of paint technology.

130 Their objective was to find the cause of "rampant" discolouration of the paints used which was not the issue at all. Colour would change with time. A uniform change of colour had occurred with time relative to the fresh paint colour. If their analytical results were useful for Carnival Red, then Fair Complexion should be equally bad which certainly was not the case.

131 In paint technology, colour changes occurred by minute chemical changes to the pigment crystals induced by weathering and it was a function of depth in the paint layer and/or degradation of the polymer which left fragments thereof in the form of a

white powder, chalking on the paint surface. In this case, no chalking could be detected.

132 The issue was colour and Setsco had no reference colour for visual nor analytical assessment. Their Test Report was in error in its substantive findings which stated or suggested that the Plaintiffs' paint was defective.

133 Asked where he got the time frame of twelve months from, Jessup replied that he had been told by the Plaintiffs when the painting work was completed. Even if the fading had occurred within six months, he would not be too concerned as "colour fade could occur rapidly or slowly initially".

134 Jessup agreed that it was a possibility that if the batch card contained an error, that could contribute to colour fade. On the question of changes made to the Fair Complexion paint in between batches, he said that if the changes related to the limits, it was normal practice that they would be under review batch by batch. The limits would be based on the master formulation and the theoretical calculations. The manufacturers could produce a batch and reset the limits for primarily statistical purposes. It would have no effect on the paint quality. Quality control tests, unlike performance tests, would not reflect on the performance of the paint at all. They were only to ensure that each subsequent batch was similar to the previous one.

135 The proportion of pigments used was only to obtain colour and had nothing to do with light fastness or ultra violet light resistance. For ultra violet resistance, the first material to focus on would be the polymer which bound all the materials together to form a compound called the paint layer. The polymer selected must be one that would not break down under ultra violet light. It was concentration and not distribution of pigments that affected opacity. Uneven distribution of pigments would affect the colour and not the opacity.

THE DECISION OF THE COURT

136 As the Defendants did not contest the Plaintiffs' claim at the trial, I gave judgment for the Plaintiffs for $14,595.10 and awarded interest thereon at 6% per annum from the date of the writ of summons to the date of judgment.

137 Where the Counterclaim was concerned, I was of the view that the Defendants had proved their case and therefore ordered interlocutory judgment to be entered against the Plaintiffs for damages to be assessed by the Registrar. The assessment would be on the basis that the Defendants had to repaint the external walls in the project previously painted with the Plaintiffs' Carnival Red and Fair Complexion paints except for one block (Block 263-301). This block was excluded as it appeared to me that there were fairly extensive replastering works effected before the decision was made to repaint all the external walls and that such works would have necessitated a repainting of practically the entire block in any event.

138 Insofar as the costs of hiring Setsco were concerned, I was of the view such costs should be claimed as a disbursement item in the Defendants' bill of legal costs rather than as a head of damages suffered.

139 I ordered the Plaintiffs to pay the Defendants 90% of the costs of the trial (to be taxed or agreed). The trial was concerned with the Defendants' counterclaim only but the Defendants had not conceded to the Plaintiffs' claim earlier. Accordingly, a deduction of 10% was made to compensate the Plaintiffs for the work that was necessary to bring their claim to Court. The costs of the assessment were reserved to the Registrar conducting the same at some future date.

140 I was satisfied that the Defendants had made it explicitly clear to the Plaintiffs' sales personnel that what they required was SS 345 certified paint and that the Plaintiffs had agreed to supply paint which had been duly certified as such or would be so certified should the colours to be chosen eventually not be among those already certified as SS 345. Paint of such quality was required by ESL (the main contractors) and the Defendants obviously had to comply with this very important condition. The first purchase order (which referred to SS 345 paint) submitted by the Defendants to the Plaintiffs was further testimony of such an agreement. The Plaintiffs had also written to SSL (the owners of the project) on 10 March 1998 stating that they were willing to give a warranty against defects for five years and they also noted that the painting/coating system must comply with the

requirement specified in SSL's contract, implying thereby that they knew the paint had to be of SS 345 certification.

141 It was not disputed that the Plaintiffs' WP 345 paint did not have SS 345 certification. This fact was not brought to the notice of the Defendants when the Plaintiffs eventually sent their quotation for their paints to the Defendants, causing the Defendants to labour under the erroneous belief all along that WP 345 Korevon was the Plaintiffs' internal code and that the paints to be supplied would be according to their oral agreement. Further, the Plaintiffs billed the Defendants according to the price quoted for SS 345 paint ($96 per 20 litres) and not according to that for WP 345 paint ($86 per 20 litres).

142 The Plaintiffs could have sent their WP 345 paints to be certified later but did not do so. Instead, they came to the trial asserting that their own internal tests had shown that their paints would have met the SS 345 standard. If the Plaintiffs were looking to employ a legally qualified person as their in-house Counsel, I have no doubt they would not entertain for one moment an applicant asserting that, although he did not have proper legal qualifications, he was as good as any lawyer. The SS 345 certification must come from the proper testing and certifying authority, the PSB. No such certification was done for the paints in question. It could not be gainsaid therefore that the Plaintiffs had breached a fundamental term of their agreement with the Defendants even without considering all the other issues raised in the trial. This breach by the Plaintiffs would have rendered the Defendants liable for breach of their contract with ESL which could insist that repainting of the external walls be done with the proper paints.

143 Moving now to the other issues, I was satisfied that, by January 2000, the external paintwork (in particular, the Carnival Red) had faded to such an extent that the purchasers of the units and SSL had to take action. In turn, ESL looked to the Defendants who, quite fairly, wrote to the Plaintiffs to ask for an explanation. I believed the Defendants' evidence that the Plaintiffs failed to respond to the four letters sent to them. I could not accept the Plaintiffs' evidence that their representatives had called at the project site in April 2000 to look into the matter. Their evidence on this appeared to be an afterthought. It surfaced only during the cross-examination of Kelvin Kim and his evidence on this was at odds with Yoo's in any event. It was also highly unlikely that the Plaintiffs would have allowed the Defendants' letters alleging a lack of response, which they did not deny receiving, to go unchallenged.

144 I accepted the Defendants' evidence that they had not mixed or diluted the two paints in question. The Plaintiffs' questions on mixing or dilution of paints were highly speculative and found no support in their own expert's opinion. I could see no reason why the Defendants should need to keep detailed records of where each batch of paint went. I found it extremely hard to believe that the Defendants would jeopardize such a big contract by mixing or diluting paints in order to cut costs by $1,000 to $2,000. Even if the Defendants had decided to mix other paints with the two in issue, it would have been totally foolhardy to use the Blue Glow paint with Carnival Red. I accepted Vincent Lim's evidence that the Blue Glow paint was used to paint the internal areas. The photographs supported his testimony.

145 I was also satisfied that the Defendants had done their painting work in an acceptable manner. The architect for the project thought so. His completion certificate mentioned that touch-up external painting work had to be done but that was something to be expected in practically every painting project and was entirely unexceptionable. Of course the Defendants' workers were no Michelangelos painting the epic masterpiece on the ceiling of the Sistine Chapel. As the Defendants' Vincent Lim candidly acknowledged, it was possible that some portion of the walls here and there could have less or more than the stipulated number of coats of paint but on the whole, the painting had been done properly. It was not possible that poor application technic would have caused the scale and degree of fade evident in the project. It was the Plaintiffs' view in any event that thickness of layers was more important than number of layers. Further, the two samples of Carnival Red which had five coats also showed fading anyway.

146 The degree of colour fade and the differences in tone, particularly of the Carnival Red, seen in the photographs taken less than one year after the completion of the project were far from acceptable aesthetically even from the most charitable viewpoint. I accepted that the touch-up paint used was the same Carnival Red and not some other paint. The suggestion that the overhangs would not look so bad if they had been completely repainted merely begged the question – why was the fading of the original paintwork so drastic that any touch-up work had to necessitate a complete repainting?

147 The need to repaint the whole project was not the result of the touch-up plastering works. As I have indicated earlier, only one block appeared to need fairly extensive touch-up works. The rest of the blocks were touched up only after it became abundantly clear that the entire project's external walls had to be repainted because of the Plaintiffs' paints and even then, the touch-up was not extensive. The architect did not indicate in his completion certificate that massive replastering was necessary. The evidence did not show that there were numerous complaints from the purchasers about plaster cracks. It did show that there were many complaints regarding the paintwork on the external walls. I rejected all suggestions concerning any deal among SSL, ESL and the Defendants to make the Plaintiffs the scapegoat for the replastering works. They were speculative and ran totally against the evidence given by SSL's representatives, who were not even willing to testify for the Defendants until compelled by law to do so.

148 The Plaintiffs' two paints were the paints used. Adulteration of the two paints did not occur. Poor application technic did not cause the colour fade. Neither was the substrate the cause. Having eliminated all supervening factors, the most logical conclusion, on a balance of probabilities, must be that the fault lay in the Plaintiffs' paints despite the Plaintiffs' subsequent clinical accelerated weathering tests (which were not conducted or verified by an independent party) and I so held. On this score, therefore, the Plaintiffs were also in breach of their contractual obligations to the Defendants in that their paints were not fit for external use, at least in Singapore.

Sgd:

Tay Yong Kwang
Judicial Commissioner

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