

BFG TECHNICAL DOCUMENT

B.F.GOODRICH CHEMICAL COMPANY TECHNICAL REPORT

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TITLE Sunlite Plastics, Inc. Tubing Extractions																
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REQUESTED BY: G. F. Cohan	LOCATION Cleveland Office	PROJECT NO.														
SUMMARY <u>Introduction</u> Sunlite made tubing for intravenous feeding from Geon® G-92 resin during 1974 and 1975. On 7-14-75, the first complaint occurred based on an extraction test Sunlite employed. A floccy material was found in tubing with a 5% sodium bicarbonate solution and with a 5% dextrose + 0.2% sodium chloride solution. American Hospital analyzed the floc and stated it was glycol monostearate. BFG then substituted 110X402 (103EP UPS-1) for the G-92 to determine if this were more acceptable. On 8-28-75, Sunlite said they obtained a floc when a tube was filled with water and held for 24 hours. Our Analytical Group looked at the flocs from the three pieces of tubing. The precipitate on the wall of a bottle made by A. T. Kukic was also analyzed. <u>Summary</u> 1. The floc extracted from the tubing made from G-92 was sorbitan monostearate. This is Span 60 or Glycomol S. Both the Infra-red and the Mass Spectrometer verify the analysis. No other material was present. 2. The floc extracted from the tubing made from 110X402 was a cellulosic. This cellulosic does not correspond to MOC F-50, PVA or Tween 21 which are present in 110X402. The 110X402 made at Louisville was extracted separately and showed the presence of MOC F-50, PVA and Tween 21. 3. The bottle made from G-92 (compound 83408) had contained tap water for over one year. The analysis of the precipitate on the wall did not uncover any composition which helped to solve the Sunlite problem. <u>Recommendations</u> 1. Do not supply G-92 resin for an application where the Span 60 can be extracted by water or a water solution. 2. The cellulosic found in the water extractant of the tubing made from 110X402 does not correspond to any of our dispersants. Continue to supply 110X402 to Sunlite.																
LOG BOOK REFERENCE:		GROUP FILE ACQ. NO.														
DISTRIBUTION: CTF <table style="width: 100%; margin-top: 5px;"> <tr> <td style="width: 50%;">W. C. Bachtel ✓</td> <td style="width: 50%;">E. B. Osborne</td> </tr> <tr> <td>L. B. Crider</td> <td>G. D. Schaaf</td> </tr> <tr> <td>F. E. Krause</td> <td>A. L. Schultz</td> </tr> <tr> <td>D. G. Kuharek</td> <td>E. G. Schwaegerle</td> </tr> <tr> <td>A. T. Kukic</td> <td>W. M. Smith</td> </tr> <tr> <td>J. F. Malone</td> <td>C. T. F.</td> </tr> <tr> <td colspan="2">M. M. O'Mara-J. L. Dorsch - J. W. Ryan - R. R. Yount</td> </tr> </table>			W. C. Bachtel ✓	E. B. Osborne	L. B. Crider	G. D. Schaaf	F. E. Krause	A. L. Schultz	D. G. Kuharek	E. G. Schwaegerle	A. T. Kukic	W. M. Smith	J. F. Malone	C. T. F.	M. M. O'Mara-J. L. Dorsch - J. W. Ryan - R. R. Yount	
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September 16, 1975

Acknowledgements

The Analytical Group of Staff Technical Services did a fine job in determining the compositions of the samples. Those who worked on the problem were J. L. Dorsch (Mass Spec), M. M. O'Mara, J. W. Ryan (Infra-red) and R. A. Yount (Atomic Absorption).

Discussion

The toxicity of sorbitan monostearate in the blood stream is not positively determined. However, the high quantity of floc that was extracted from the tubing in a simulated intravenous procedure leads us to recommend that G-92 not be used for this application. For one, the floc is so heavy it might plug the needle. But, the telling blow is the aesthetic appearance of the floc in the tubing. That quality wouldn't sell.

Jack Ryan looked at the floc from the tubing made with 110X402. He ran the spectra for MOC F-50 which we use in the recipe. He extracted the 110X402 resin made at Louisville (done at room temperature for 24 hours using DM water). In the extract, he found MOC F-50 (the spectra was not charged from the charged material), Vinol 540, PVA and Tween 21. The floc from the tubing contained a cellulosic. It was not MOC F-50 and there was no PVA or Tween 21. Therefore, the data does not support the implied claim that the floc extracted from the tubing was one of our dispersants. The floc appears to be a contaminant--or else, the resin used was not 110X402. Jack will try to define the resin used. (See J. W. Ryan's attached report.)

A lot of work went into trying to identify the precipitate on the wall of the bottle made by Andy Kukic. The bottle was filled with tap water and held over a year. The inside wall was covered with a yellow film. The film was 10-15% ester and 85-90% salt of a fatty acid. The ester was Span 60. The fatty acid was a stearate of calcium. There was a small amount of iron and very low levels of phosphorous and zinc. Apparently the calcium in the water reacted with the stearate of the Span 80 during the year's contact. (See R. A. Yount's attached report.)

Future Work

1. You suggested getting tubing made at Louisville from 83403, 83405 or 83408. These could be extracted and the extract analyzed. This can be done.


H. H. Marty

HHM:pj

Reports Attached:

1. Examination of Sludge From Water Exposed to Tubing Made from 110X402 Resin, J. W. Ryan (JWR-64-75), 9-16-75.
2. White Precipitate from Inside Tubing Used for Medical Applications, R. A. Yount, 9/22/75.

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