

Conversation with Jim Link of TILO plant, Dr. Vaughn Bullough, RRD, and H. M. Cole, on 4/4/79.

Link: Basically, we are buying asphalt roofing flux from ASPHALT INTERNATIONAL-Venezuelan asphalt - from Shell Refinery.

Typical properties we look for are a specific gravity between 96 to 93 - it has been running around 1.0. Material we are currently getting is running with an incoming softening point in the area of _____. ...

There is an ASTM Standard on it. (Softening point is determined by D-36.)

Penetration value: We require a minimum at:

32° F., 200 gr. load, 60 second penetration time of 30 decimeters.
77° F., 100 gr. load, 5 second penetration time of 100 decimeters,
(in accordance with ASTM D-5).

I think we are running well over 200 on the incoming material.
100 is the absolute minimum, but we are running much softer than that.

Evaporation of 325° F., 50 gr. sample is 5 hours -- often the maximum of 0.3% loss by weight. A minimum soluble - carbon disulfide - 99.6%. Flash point - often the upper minimum 550° F. Our runs are in the neighborhood of 600° or slightly over.

Cole: We would like a sample of the asphalt as it comes in and probably a sample at the saturator and the coater.

Link: I will send you a sample of flux saturant and the coating - probably 1 pint.

Process - We take the incoming flux, which comes from a main storage tank in New Haven (by barge) - brought by truck at temperature of approximately 300° F. It is put into storage tank (steam heated) on property at Tilo and is in the 290° to 300° range. From there, we pump it into any one of 5 horizontal holding tanks which we maintain. These are large 10,000 gal. tanks, tipped on their sides, with steam burner firebox under each one for heating process.

We put that flux into the tank, heat it - from the incoming temperature of about 290° - to about 460 to 470° F. The flux melting point must be brought up to saturant or coating grade. We then pump it from the horizontal tank over to a vertical oxidizer tank (non-heating) - a large air pump feeds it. The hose goes down through the bottom where an air spider at the bottom blows air through the coating at high temperature, material (?) ~~comes~~, which drive off low volatile action there starts chemical oxidation of the material. A considerable amount of fuming is produced during this operation. We burn them off with an incinerator, as well as a power boiler. We oxidize, add heat, the temperature rises fairly rapidly (5° in a half hour to an hour). The softening point starts to rise. We take a sample every hour and run softening points on them. At the time we get to the saturant range, we look for a softening point of 133 to 140° of saturant. By that time, the material in the oxidizer is 480 to 490°. At that point, they would stop oxidation and air, and pump it back into the tank (still). At that point, the material would be ready to use as saturant on the machine.

Loop on the saturant: #1 or #2 still or horizontal holding tank.
From that we use that to keep saturator tank (inside the plant) filled with asphalt saturant.

PLAINTIFF'S
EXHIBIT

RMC-341

RMC0800280000080

Material in the tank itself is kept at temperatures of 450 to 470° - then, by outside tube type heater, where we circulate constantly to maintain temperature.

Cooling loop: Back in oxidizer, where wea softening point temperature to 205 - 215°F. We over-oxidize to 230 - 235°, because we have a drop-back condition where we lose from oxidation and reaction reverses itself to some degree. We lose about 20° of softening point in the 1st hour, so we have to over-oxidize to make sure that we are ready to use it and it will be at the 205-215° range.

It is pumped back into the holding tank (525°). We take off a certain portion that we need on the machine, mix with approximately 65% with limestone type stabilizer in the mixing unit. Then bring it down to the bottom unit. Then bring over to a tank where temperature is kept at 425° F. and this is the temperature at which we use it on the sheet to put the coating on. Those are the 2 basic loops of the coating material on the machine itself.

We start with a dry roofing salt (a heavy grade of cardboard type paper) and go into the saturator. Go through gates (movable rolls), go down underneath level of saturant by means of a roll....asphalt saturant comes in to replace the air and is held in the felt between the fibers. Air in felt is replaced by asphalt saturant. We may need time for the asphalt to soak in. We go into a drying section, where the saturant is still wet on the surface of the sheet. We make a number of passes through this section and give it time to dry. Next, it goes through other rolls and then the coater roll, where top coater is put on, and a back coater roll, where it is put on the back of the sheet also. Temperature of the sheet at that point is 300 - 350° F. depending on temperature of saturant and tank. Might be as low as 250°. Can cause a serious burn, if you get it on you. The coating goes along. Granules on top surface and talc on the back surface.

Only other thing we do, further along, is put on a safety shield resin, as a self sealer. We believe it is made with a propane derivative. No other solvent is brought in. We believe it is premade by other companies. Only chemical work we do is the flux oxidation itself. To the best of my knowledge, our supplier does not cut back.

A little more background: Saturant and the men in section are enclosed. Pressure inside where they ...

When there is a saturant break, they have to open doors on saturator and rethread it manually and remove any in the tank itself. No, they do not wear respiratory protection. They lean over and pull it out with long rods -- they wrap it around like spaghetti. May average none some days and up to 5 or 6 on other days.

Cole:
~~xxxxx~~ Any tank breaks on the day sampling was done? Yes.

A number of people go in on tank breaks. One is dry fill operator, the saturator operator, ... Does still operator stay right at still? The stills are outside - caps for fumes over top of the stills. His job does not require him to go into the saturator. Most of his time is spent out in the area of the stills where he does his testing for softening points, with water or glycerine; he monitors the oxidation process and is responsible for preparing the material, taking flux at coating grade and making sure there is enough material at proper temperature.

The Saturator operator, dry felt operator, back tender, etc. would be likely to go in on a break. (OSHA) changed the nomenclature - they did not give name of man exposed.

Bullough. We may want to get more area samples.