

Cleaning instructions for new IGT printing discs

Printing discs must be cleaned. IGT has the best experience with an off-the-shelf product called StarWash. This is a mixture of a cleaning naphtha and an ester (chemical reaction product between an alcohol and acid) and it is made by Fuji Chemicals and delivered under different local brand names, in Europe supplied by Wifac. This product works well on all older printing disc and top rollers. From a cleaning point of view, it is also perfect for the new rubber compounds on the 402.6xx printing discs but there are problems with the drying time.

Background

The cleaning naphtha dissolves the a-polar components of the ink and the ester the more polar components, therefore a wide range of components can be washed away. However, esters have a disadvantage: they create in general a rubber swell. Because of that it takes a long time before a rubber printing disc is dry after cleaning while fast drying is necessary when making weighed prints for color matching or other critical applications.

Rubber swell reduction

Cleaning naphtha and alcohols do not give rubber swell on the rubbers used by IGT. Because of this reason, IGT started a development to make a mixture of cleaning naphtha and ethanol for an optimal combination of cleaning and drying properties. Naphtha's with a lower boiling point do mix better with ethanol. The lower boiling point is caused by the shorter length of the hydrocarbon chains mentioned by a lower number after the C in the chemical formula.

The alcohol, we used was 96% ethanol with 5% methanol. More water in the ethanol will have a negative influence on the mixture. This is laboratory quality ethanol.

Result

Thus, we came to a mixing rate of 40 % Cleaning naphtha with 60 % alcohol to clean the new rubber discs. The mixture of naphtha/ ethanol cleans well and evaporates fast. After cleaning the disc, the weight of the disc is within 15 seconds on dry weight again. This makes the mixture suited for making weighed prints.

Important considerations

There are a lot of different "cleaning naphtha's" sold under different names like white spirit, petroleum naphtha and with different levels of purity. All of them are a mixture of hydrocarbons like kerosene, petrol and gasoline. However, in many types there are up to 25% impurities which are no (cleaning) problem if burned in a stove or a car but which are harmful for high purity rubbers like the rubbers on IGT rollers. Because of this and because you are using it all day and thus exposed to the vapor we prefer an aromatic free naphtha. Generally, it can be stated that if the liquid is not fully clear it contains impurities and is less suitable for our purpose.

Our preference is for a naphtha mixture of C7-C12 chains with a boiling point between 135°C and 180°C. A lower boiling point also means a lower flash point. Without good ventilation or exhaust the mixture can lead to an explosive air mixture. That is why lower boiling points are not advised.

Safety

Note that all these chemicals are highly inflammable and may cause explosive fumes if used in insufficient ventilated areas! Also, note that many people are skin, smell or breath sensitive to the liquids or the fumes. For that reason, always wear protective clothing, gloves, goggles and masks where applicable.

IGT Testing Systems, 15 January 2017