CLEANABILITY EVALUATION OF DIFFERENT SURFACES BY FOULING FROM CONTACT FRYING OF FOODS

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ABSTRACT

The aim of this investigation was to evaluate the cleanability of different surfaces by fouling from contact frying of carrot, sweet potato and turkey meat (with and without the use of oil) at 200ºC and 240ºC. The different surfaces investigated include 316 grade stainless steel (316 SS), polytetrafluoroethylene (Teflon®) coated on 316 SS, silicone (silicone rubber Elastocil E60) coated on anodized aluminum, quasicrystalline coated on 316 SS and ceramics (zirconium oxide, zirconium nitride and titanium aluminum nitride) coated on unpolished and electropolished 316 SS.

The cleanability of the various surfaces was rated by a standardized procedure developed by repeated experimental trials. The statistical calculation by *t*-test shows that there is a significant difference between the cleanability of different surfaces. The fouling from contact frying of different foods has found to have a strong influence on the cleaning properties of different surfaces and the use of oil has also found to have a remarkable influence on the easy-clean properties of the various surfaces. The results show that the cleanability of steel is enhanced by the different coatings. The topography of the surfaces was described by the profilometry and the electron microscope. The ceramics coated on electropolished 316 SS show enhanced cleanability when compared to ceramics coated on unpolished 316 SS due to the difference in their topography.

Keywords: *Cleanability; Different surfaces; Fouling; Contact frying; 316 SS; Topography;*