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**To:** **Ref.:**

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**Object:** Bunge Pro frying oil products frying tests report

**Objective:**

Application test with BungePro oil product in application lab - R&D centre (Katalin Kővári Innovation Center [KKIC]), and evaluating/ comparing the everyday behavior of these oil products. The base oils were refined oils produced in Bunge Martfű plant, Hungary (BEMEA):

- Sunflower oil
- High Oleic Sunflower oil (HOSO)

**Recipe:**

Agency code	Oil blend code	Sunflower oil (%)	High oleic sunflower oil (%)	Antifoaming agent (mg/kg)
	F5	50	50	5

**Application tests:**

**Fried food:**

- pre-fried deep frozen potato  
Caterpak French fries 3/8" 9/9 mm - produced by McCain Foods Europe (MFE)  
Oranjeplaatweg 4A, 4458 NM, Lewedorp, The Netherland  
Ingredients: potatoes, vegetable oil (palm oil, sunflower oil in varying portion)



- pre-fried deep frozen pork chop  
Nádudvari breaded pork slices  
Ingredients: pork chop (boneless) 61%, water, breadcrumb, wheat flour, sunflower oil, breadcrumb powder, marinade, salt. May contain soy and egg!



Oils for test:

- oil blend (details in the Recipes section)

Details about the frying test:

- **Type of frying:**  
batch deep frying (~2 kg oil capacity Pelgrim DOFR 30 - built-in deep-fryers)
- **Frying time:**  
6 hours frying /day  
1 hour = 3x(3.5 min frying of pre-fried French fries + 11.5 min heating)+1x(9 min frying of pre-fried breaded pork slices + 6 min heating)
- **Food : oil ratio** = 1:15
- **Heating:**  
up to 180°C (check the temperature by external thermometer in every hour)
- **Replenish the oil:**  
5 times / day - at the end of the first 5 hours  
replenish oil amount per day = 5x (initial amount of oil in the fryer/50)  
As: fill up the fryer with 2100 g oil at the beginning → replenish by 5 x 42 g each day
- **Filtration:**  
Filter the small particles from oil at the end of every 2nd day.
- **Sampling:**  
~40 mL oil at the end of the day.
- **Analyses from the oil samples:**  
Total polar material (TPM)  
Free fatty acid  
p-Anisidine value  
Peroxide value

**Results:**

The samples were analysed in the KKIC internal laboratory:

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H-1097 Budapest, Illatos út 38. DÜP II. G épület/ 3. em.  
Tel.: +36 1 476 3610 Fax: +36 1 217 5241  
www.bunge.hu

**BUNGE Zrt.**  
1134 Budapest, Váci út 33.  
Cg. 01-10-041976  
Adószám: 10783830-2-44 6.

	<i>Days of frying</i>	TPM	FFA	pAV
		%	%	
Bunge Pro F5	0	2,51	0,03	1,8
	1	6,57	0,12	40,1
	2	9,79	0,14	57,1
	3	13,36	0,31	79,6
	4	15,1	0,38	82,3
	5	16,7	0,46	95,4
	6	18,4	0,57	92,4
	7	19,8	0,69	91,1
	8	21,3	0,86	92,8
	9	24,5	0,98	95,1

### Conclusions:

Most of the European countries have limits and or recommendations for total polar material content, which is 25% on average. If the frying oil exceeds these limits the oil has to be discharged.

The results were analysed by internal lab, and cannot be used on a legal basis. An external measurement is necessary to be usable.

Therefore the defined fry-life of the tested frying oils respecting average real application conditions is the following:

	Maximum days of frying	Maximum hours of frying
<i>Bunge Pro F5</i>	7	42

The reference oils tested in the same frying application had the following results:

- regular sunflower 1.5 days
- palm oil 2.5 days.

