

Plant oils and their uses

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|----|-----|---|---|-----|
| 1. | (a) | soft from vegetable oils only
<i>accept Z</i> | 1 | |
| | | contains the high(est) amount of polyunsaturated fat
or the low(est) amount of saturated fat
<i>ignore any values / percentages</i> | 1 | |
| | (b) | (i) unsaturated | 1 | |
| | | (ii) hydrogen | 1 | |
| | | higher | 1 | [5] |
| 2. | (a) | (i) crushed
<i>if line blank allow crushed circled in the box</i> | 1 | |
| | | (ii) any one from: | | |
| | | • 'costs' less / cheaper | | |
| | | • easier / faster | | |
| | | • less complicated equipment | | |
| | | • does not need heating / energy | | |
| | | • distilling could decompose the oil | 1 | |
| | (b) | (i) any one from: | | |
| | | • do not mix / dissolve | | |
| | | • (stay) separate | | |
| | | • form layers | | |
| | | • are immiscible | 1 | |
| | | (ii) mix
<i>words must be in correct places</i> | 1 | |
| | | emulsion | 1 | [5] |
| 3. | (a) | (i) soya
<i>allow bean</i> | 1 | |
| | | high(est) in polyunsaturated fat and low(est) in saturated fat
<i>independent mark</i> | 1 | |
| | | (ii) same / balanced amount of each fat
<i>accept it contains the lowest total amount of these fats or it is <u>low</u> in saturated fat</i>
<i>allow <u>only</u> 14% for this mark</i> | 1 | |
| | (b) | (i) turns colourless
<i>accept colour disappears</i>
<i>ignore fading</i> | 1 | |
| | | (ii) any two from: | | |
| | | • unsaturated fat content / healthiness about the same / similar to maize | | |

*accept about the same number of double carbon bonds as maize
accept 'a bit less' for similar*

- less unsaturated / less healthy than soya
*accept fewer / less double bonds than soya
ignore 'more saturated'*
- more unsaturated / more healthy than olive / palm 2
*accept more double bonds than olive / palm
ignore 'less saturated'
if no other mark awarded accept sunflower oil has (about) the
same result as maize oil for 1 mark
ignore comments about saturated fats*

[6]

4. (a) yes (there is the general trend) 'as the iodine value increases the melting point decreases' or 'as the hardness decreases the mp decreases'
*accept converse statement
do **not** accept boiling point*
- or no** melting points are in random order / go up and down 1
- one specific use of comparative data from the table either showing the trend or an anomaly 1
*can be gained from yes or no answer
ignore bp*
- (b) the iodine turns colourless 1
this would be difficult to see (if the oil was dark coloured) 1
*allow similar colour as iodine **or** iodine is brown*
- (c) (consumer may think that) the company (scientists) would be biased 1
consumer more likely to trust independent scientists 1
allow independent scientists not biased
- (d) add (measured amount of) hydrogen 1
accept hydrogenation
- any **two** from: 2
- (nickel) catalyst
 - hot / 60°C temperature
 - hardened
*accept add a hard / hydrogenated fat / oil **or** make an emulsion*

[9]