Essential oils

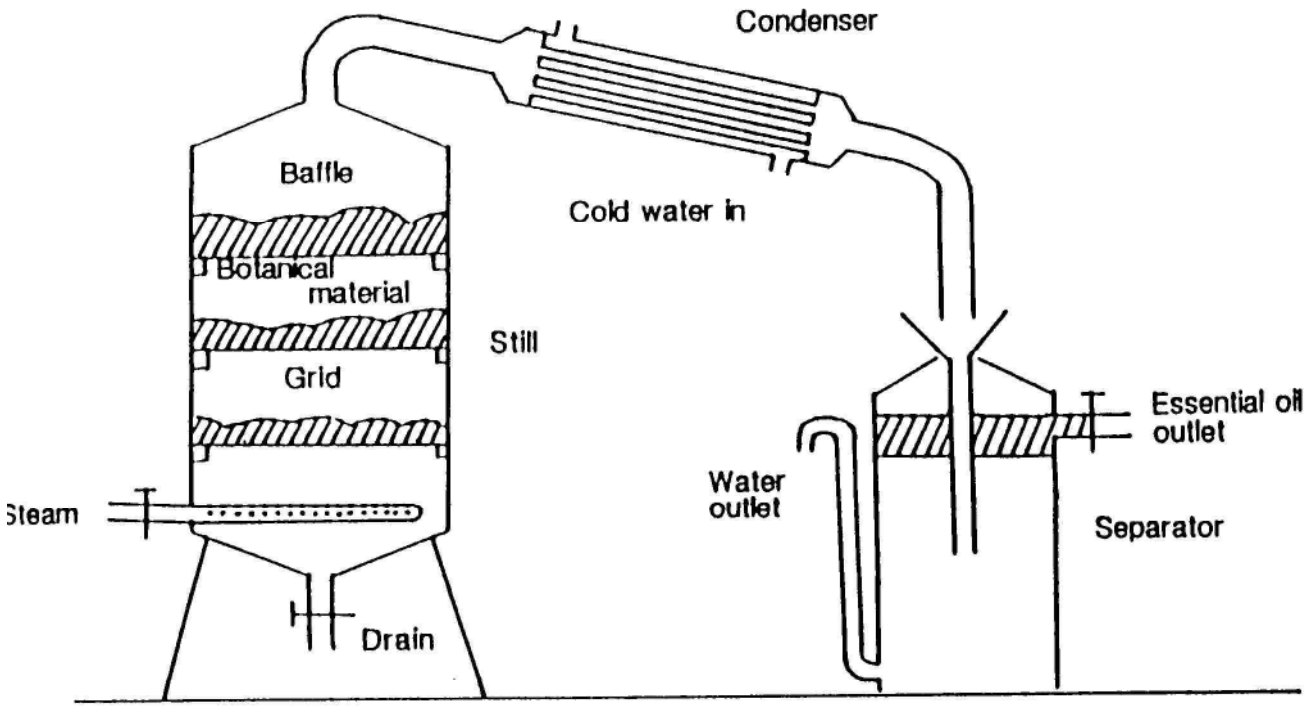
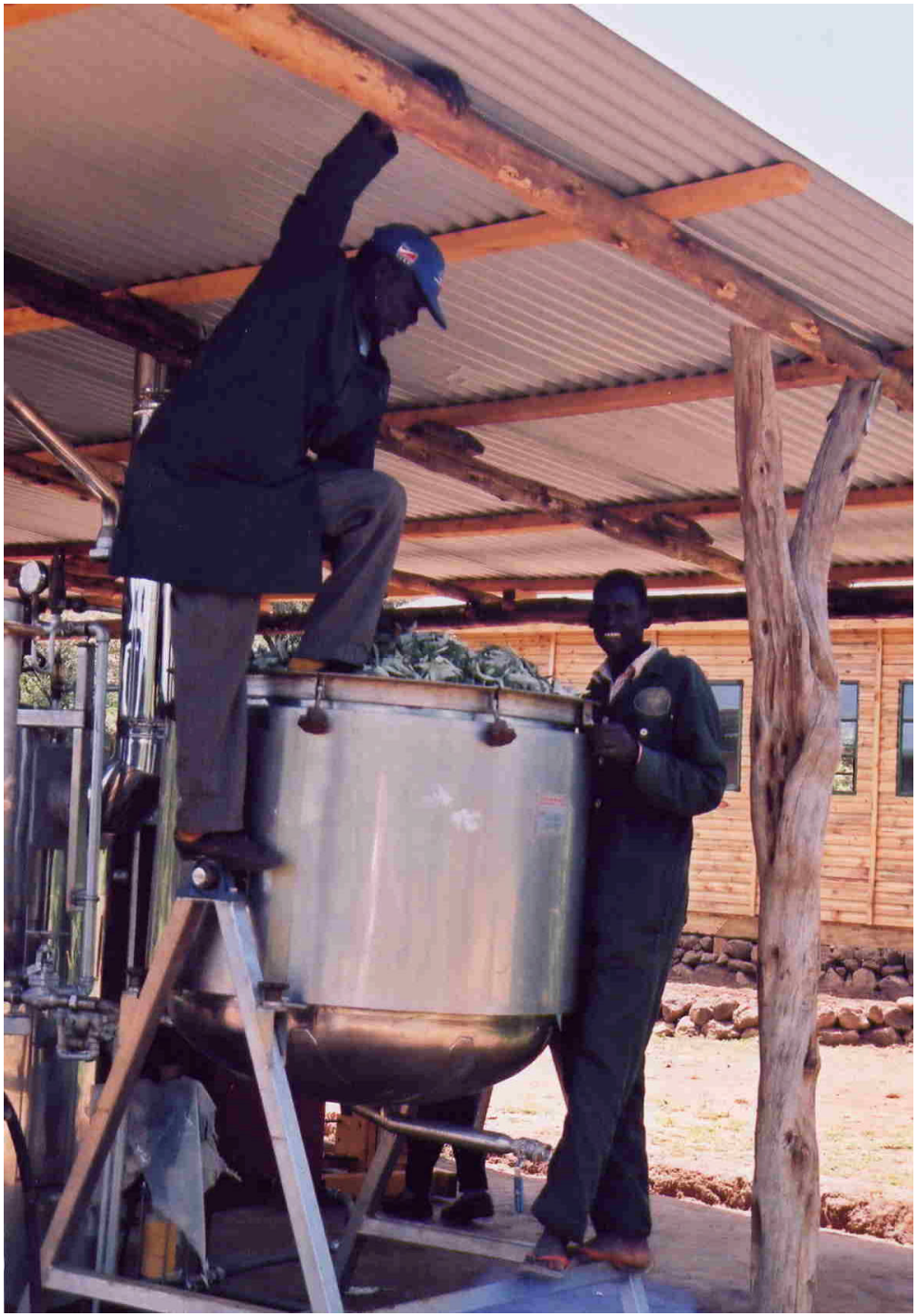
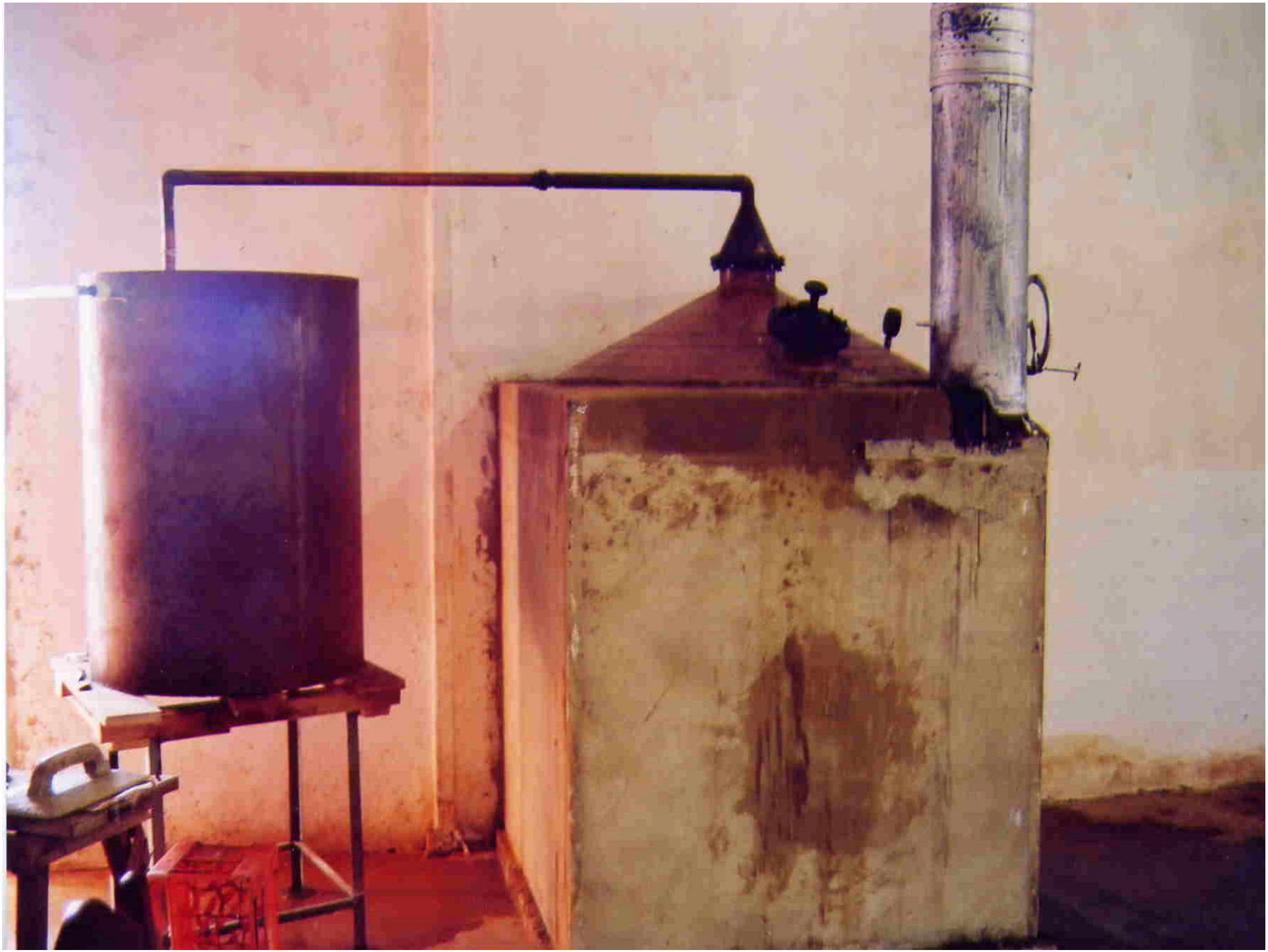


Diagram of typical steam distillation plant.





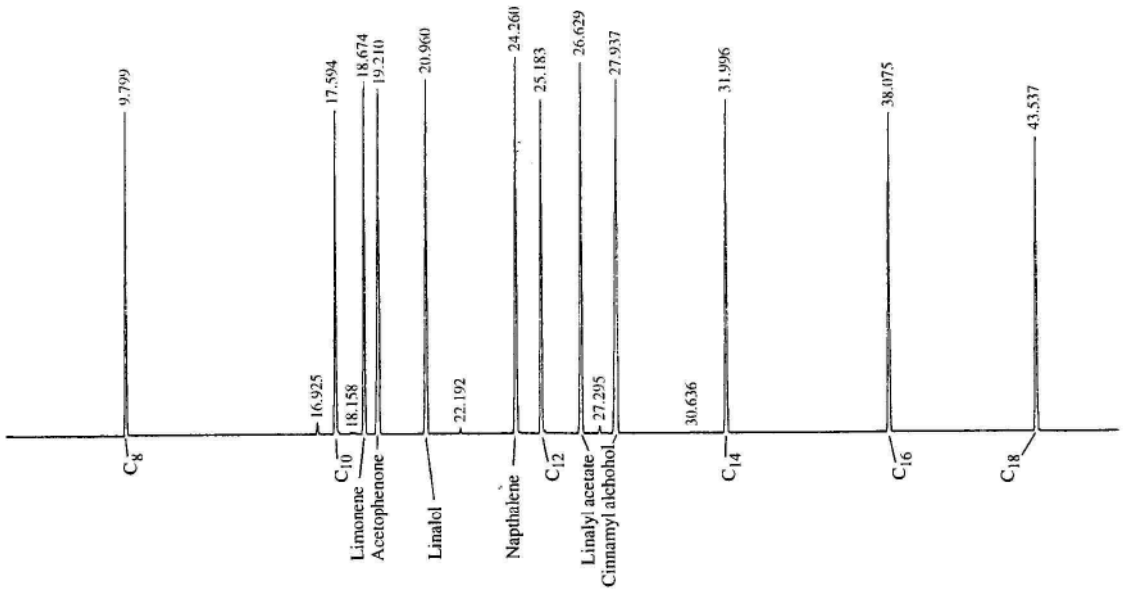


Fig. 1 Typical chromatogram of NC–hydrocarbon mixture.

5 Calculation of g-pack value

Test compound	RRI	Y factor	X factor	Z factor
Limonene	1020	$\frac{(\text{RRI} \times 0.14) + 2}{136.23} = 1.0629$	$1.0584 \times Y = 1.1250$	$1.0584^2 \times Y = 1.1907$
Acetophenone	1034	$\frac{(\text{RRI} \times 0.14) + 2}{120.14} = 1.2216$	$1.3350 \times Y = 1.6308$	$1.3350^2 \times Y = 2.1772$
Linalol	1084	$\frac{(\text{RRI} \times 0.14) + 2}{154.24} = 0.9969$	$1.0218 \times Y = 1.0186$	$1.0218^2 \times Y = 1.0408$
Naphthalene	1156	$\frac{(\text{RRI} \times 0.14) + 2}{128.16} = 1.2784$	$1.3361 \times Y = 1.7081$	$1.3361^2 \times Y = 2.2822$
Linalyl acetate	1241	$\frac{(\text{RRI} \times 0.14) + 2}{196.28} = 0.8954$	$0.8797 \times Y = 0.7877$	$0.8797^2 \times Y = 0.6929$
Cinnamyl alcohol	1273	$\frac{(\text{RRI} \times 0.14) + 2}{134.17} = 1.3432$	$1.4993 \times Y = 2.0139$	$1.4993^2 \times Y = 3.0194$
	Sum	$\Sigma Y = 6.7984$	$\Sigma X = 8.2841$	$\Sigma Z = 10.4032$
	$\times$ factor f	$f_1 \Sigma Y = 6.7984 \times 1.07977 = 7.3407$	$f_2 \Sigma X = 8.2841 \times 2.88734 = 23.9190$	$f_3 \Sigma Z = 10.4032 \times 1.49758 = 15.5796$

g-pack value $= f_2 \Sigma X - f_1 \Sigma Y - f_3 \Sigma Z = 23.9190 - 7.3407 - 15.5796 = 0.9987$

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