Table 4. Results of hydropurification of the mixture (raw benzene + naphthalene fraction)

Characteristic	Before purification	After purification
Yield of liquid products, wt %	–	97.0
Formation of gases (C_1–C_4, H_2S, NH_3), wt %	–	2.2
Yield of water, wt %	–	0.2
Hydrogen consumption in reaction, wt %	–	0.6
Composition of liquid products, wt %:		
saturated hydrocarbons	0.3	2.9
benzene	46.2	47.6
toluene	12.4	12.8
xylenes	3.2	3.8
ethylbenzene	0.4	0.9
C_9 aromatic hydrocarbons	3.2	3.6
tetralin + methyltetralin	<0.01	15.8
thiophene and methylthiophenes	0.4	None
naphthalene	23.4	10.2
2-methylnaphthalene	1.7	0.8
1-methylnaphthalene	1.2	0.2
6-methylnaphthalene	1.5	1.1
methylindane	1.0	0.9
decalin	1.2	1.0
thionaphthene	0.20	None
phenols C_6–C_8	0.7	None
nitrogen bases	0.4	None
other compounds	4.5	4.2
Sulfur content, wt %	0.17	<0.001

methyltetralins, as we see in Table 4) in the presence of 12–15% steam. Radical compounds in the initial mixture are stabilized by the presence of tetralin (a hydrogen donor) or analogous compounds capable of rapid decomposition with the release of active atomic hydrogen. That considerably decreases the coke deposition on the catalyst. On decomposition, the hydrogen donors become aromatic hydrocarbons (in partic-

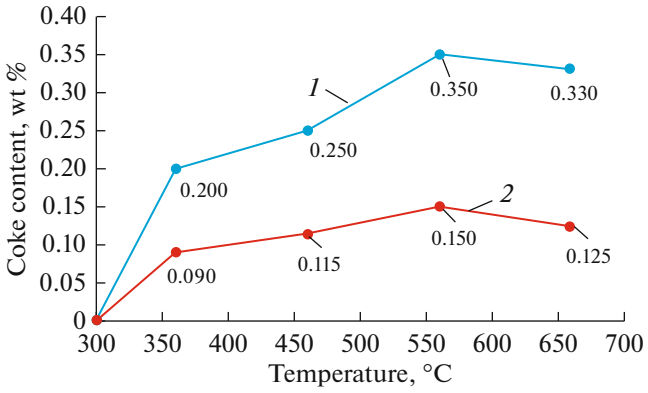

Fig. 3. Influence of added steam on coke formation in the high-temperature hydrogenation of raw benzene and the naphthalene fraction of coal tar: (*1*) no steam; (*2*) 15% steam.

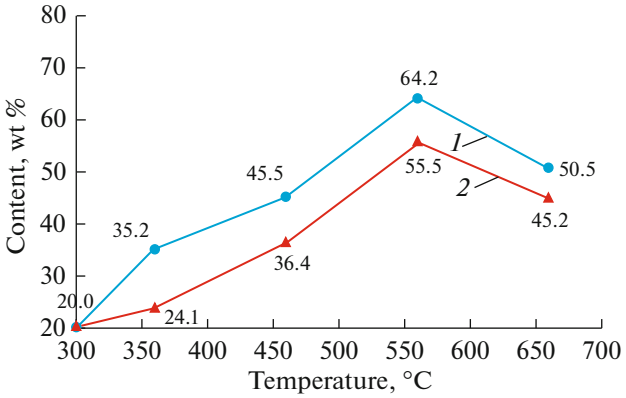

Fig. 4. Influence of added steam on naphthalene formation in the high-temperature hydrogenation of raw benzene and the naphthalene fraction of coal tar: (*1*) no steam; (*2*) 15% steam.