

CHEMICAL PROCESS FOR THE SYNTHESIS OF HIGH MOLECULAR WEIGHT SYNTHETIC PENTANE TO NONADECANE HYDROCARBONS FROM IS GAS AND HYDROGEN

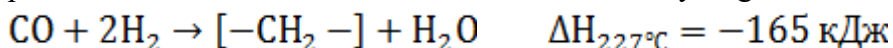
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Abstract

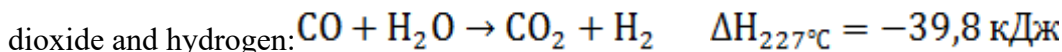
General reactions for the synthesis of hydrocarbons from carbon monoxide and hydrogen, from synthesis gas, i.e. a mixture of carbon monoxide and hydrogen, to high molecular weight synthetic pentane to nonadecane the process of obtaining hydrocarbons can be expressed by different equations, depending on the catalyst chosen and the process conditions, but they all fall into two main ones.

Introduction

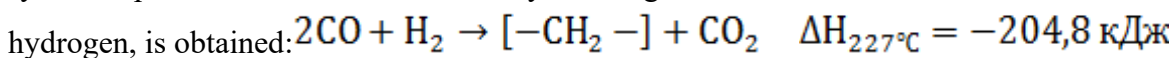
The first main reaction is the synthesis of hydrocarbons from high molecular weight synthetic pentane to nonadecane from carbon monoxide and hydrogen:



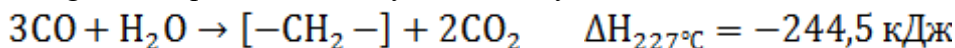
The second main reaction is the water-gas equilibrium. This secondary process, as iron undergoes, readily undergoes selective catalysts to produce hydrocarbons ranging from high molecular weight synthetic pentane to nonadecane from synthesis gas, i.e. a mixture of carbon



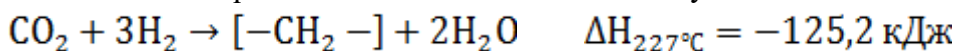
Taking into account this secondary reaction, the general equation for the synthesis of hydrocarbons from high molecular weight synthetic pentane to nonadecane from carbon monoxide and hydrogen on selected catalysts for the production of high molecular weight synthetic pentane to nonadecane from synthesis gas, i.e. a mixture of carbon monoxide and



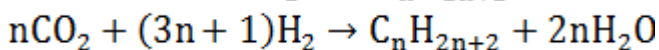
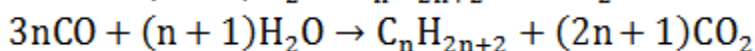
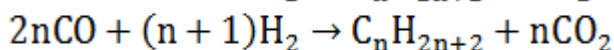
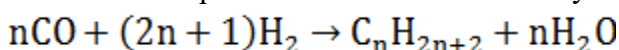
The general equation for the synthesis of hydrocarbons from CO and H₂O is as follows:



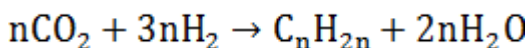
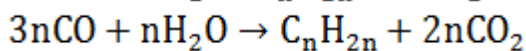
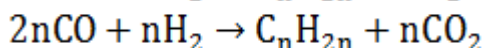
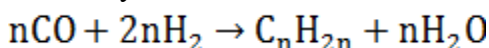
The reaction equation for the formation of hydrocarbons from CO₂ and H₂ is:



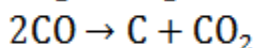
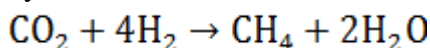
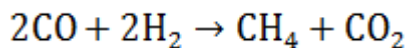
The reaction equation for the formation of hydrocarbons from CO₂ and H₂ is:



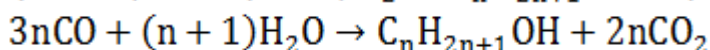
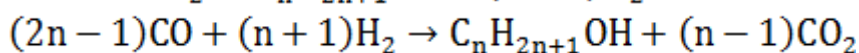
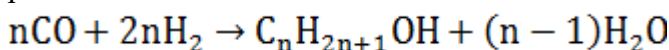
For the synthesis of olefins



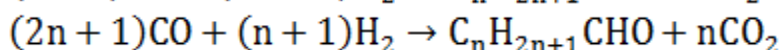
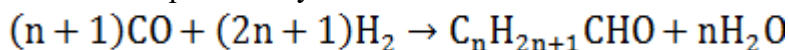
The following additional reactions take place in the synthesis of high molecular saturated hydrocarbons from carbon dioxide and hydrogen:



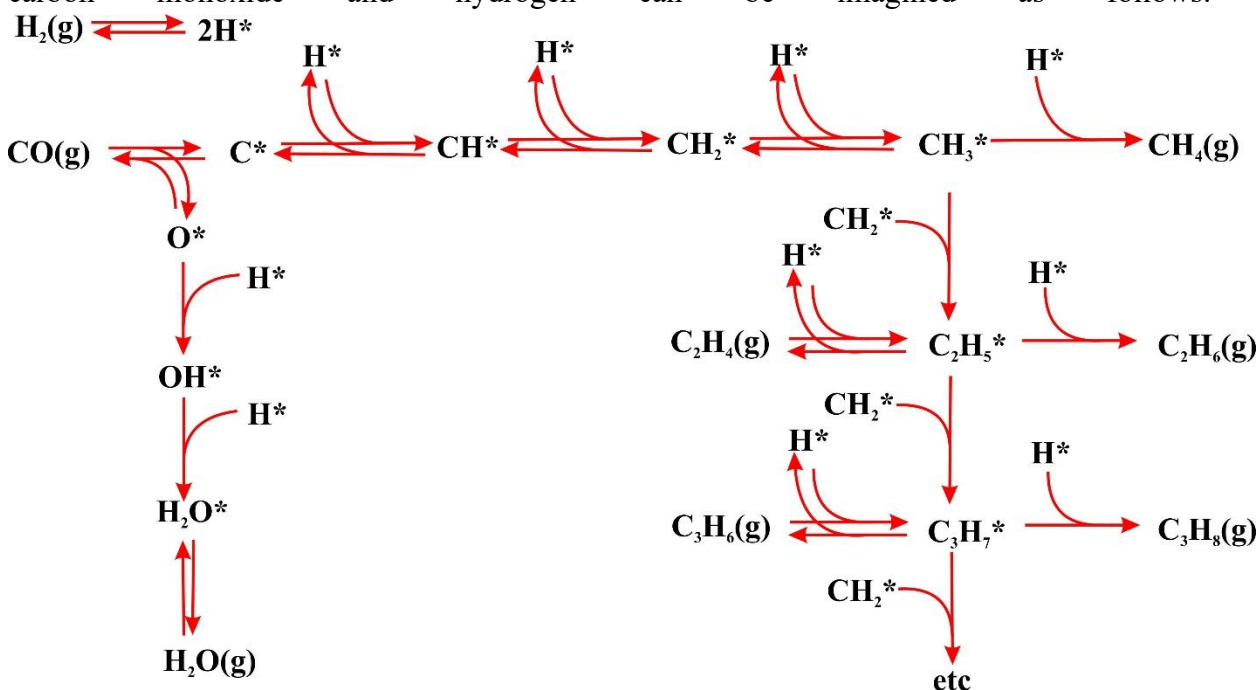
Synthesis of hydrocarbons from carbon dioxide and hydrogen from high molecular synthetic pentane to nonadecane can lead to the formation of alcohols and aldehydes:



Альдегидлар ҳосил бўлиши:



The reaction mechanism for producing high-molecular synthetic liquid hydrocarbons from carbon monoxide and hydrogen can be imagined as follows:

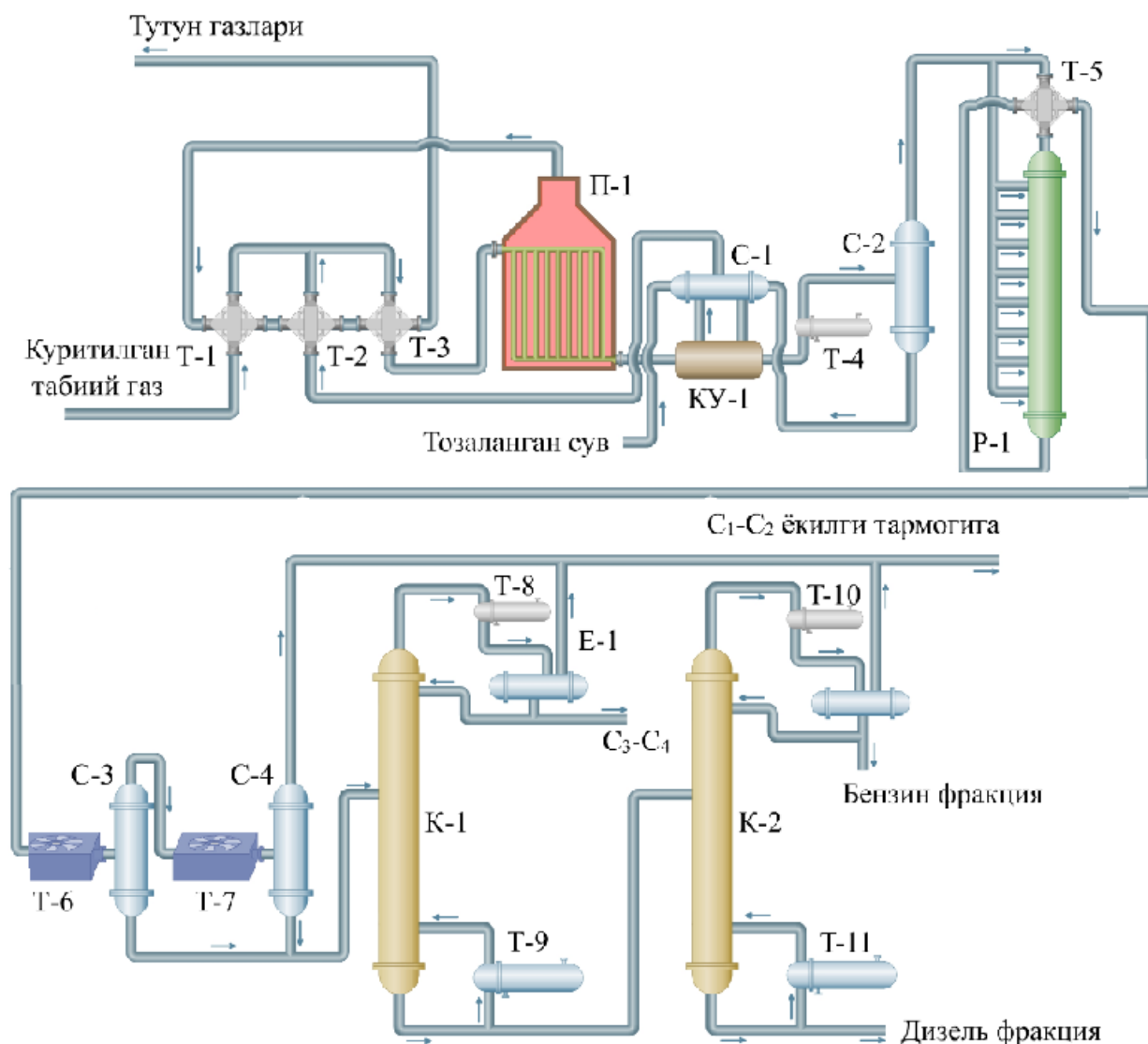


1.2. Process technology for producing hydrocarbons from high molecular weight synthetic pentane to nonadecane from carbon monoxide and hydrogen [121]

Natural gas purified from water vapors and sulfur compounds with the help of special adsorbents is heated in the T-1 heat exchanger[121].

It is cooled in the T-2 heat exchanger; it is heated in the T-3 heat exchanger and sent to the boiler KU-1, then the mixture of flue gas and hydrogen is fed through the C-1 separator to the superheater of the T-2 heat exchanger[121].

In the T-4 heat exchanger, the gas mixture is cooled and returned to the C-1 separator for steam purification. The mixture of flue gas and hydrogen, purified from water vapor, is heated in the T-5 heat exchanger and sent to the P-1 reactor to produce high-molecular synthetic hydrocarbons from pentane to nonadecane.



T-1 heat exchanger; T-2 heat exchanger; T-3 heat exchanger; P-1 furnace; KU-1 heat boiler; C-1 separator; T-4 heat exchanger; C-2 separator; T-5 heat exchanger; P-1 for the production of hydrocarbons from high molecular weight synthetic pentane to nonadecane from soot gas and hydrogen intended reactor; T-6 heat exchanger; C-3 separator; K-1 stabilization column; T-7 heat exchanger; C-4 separator; T-8 heat exchanger; E-1 reflux vessel; T-9 heat exchanger; K-2 column

Fig. 28. Technological scheme of the process of obtaining hydrocarbons from high molecular weight synthetic pentane to nonadecane from soot gas and hydrogen

The reaction mixture obtained in -1 is cooled in the T-6 heat exchanger and separated into propane to hexadecane fractions in the C-3 separator, then the remaining gas phase from the C-3 separator is cooled in the T-7 heat exchanger and enters the C-4 separator.

After separation of propane to hexadecane fractions The remaining gases, containing methane and C2 carbon atoms, are discharged from the C-4 separator into the general fuel network. 10 млн.м³ кубватга эга синтез газини ишлаб чиқарувчи усқунанинг моддий баланси 29-жадвалда келтирилган.

Table 1 Material balance of synthesis gas production equipment

Crimea			Consumption		
	т/г	Weight %		т/г	Weight %
CH ₄	2597,40	38,36	CO ₂	1799,42	26,58
H ₂ O	519,48	7,67	CO	4189,11	61,87
O ₂	2857,14	42,20	H ₂	593,64	8,77
H ₂	109,13	1,62	CH ₄	79,37	1,17
CO ₂	687,50	10,15	H ₂	109,13	1,61
Total	6770,65	100	Total	6770,67	100

The material balance of the synthesis of hydrocarbons from high molecular weight synthetic pentane to nonadecane from carbon monoxide and hydrogen with respect to the selected catalyst K1.2.2.2 for the production of high molecular weight synthetic pentane to nonadecane from synthesis gas, i.e. a mixture of carbon monoxide and hydrogen, is presented in Table 29..

Table 2. Material balance for the synthesis of high molecular weight synthetic pentane to nondecane hydrocarbons from carbon dioxide and hydrogen for organic products

Crimea			Crimea		
	т/г	Weight %		т/г	Weight %
CO ₂	4189,11	87,59	C ₁	197,05	4,12
H ₂	593,64	14,41	C ₂ - C ₄	118,61	2,48
			C ₅ - C ₇	947,94	19,82
			C ₈	1840,88	38,49
			C ₉ - C ₁₂	927,85	19,40
			C ₁₂ - C ₁₆	429,49	8,98
			C ₁₆₊	206,14	4,31
Total	4782,75	100	Синтез-газ	114,79	2,40
Total	4782,75	100	Total	4782,75	100

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