

Technical Information

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Pressure drop of KATEC-Allmetal-Catalysts

The metal supported KATEC-catalysts has an especially low pressure drop due to the compressed ribbon structure.

The basic material is designed to provide a large surface for the coating process of the activated precious metal catalyst material. The structure of the basic material is very important because it determines gas distribution and pressure drop.

The stabilized metal supported catalyst shows the advantage at the normal flow rates, that good gas distribution is achieved with low pressure drop values because of the form of the basic material. These values depend on average gas temperature, entry velocity and catalyst bed depth. The values increase with rising average temperatures, flow rates and with deeper catalyst beds.

Pages 3, 4, 5 and 6 contain pressure drop values (graphical) for the standard depth 2, 3, and 4 as well as those for expanded elements type 2E. The values are related to average temperatures and varying flow rates, expressed as per cent of maximum allowable flow. The 100 % flow shown is the flow in Nm³/h as listed in page 5 of "Technical Information" No. 1.

In this table maximum allowable flow rates are expressed for common, easily combustible hydrocarbon vapours.

Example:

Catalysts type -2, -3, -4 and -2E are installed for flow rates equal to 60 % of the maximum allowable (see table "Technical Information" No. 1). The average median catalyst temperature is 450 °C. The pressure drop values are as follows

Catalyst type -2	5 mm WC	(see graph page 3)
Catalyst type -3	15 mm WC	(see graph page 4)
Catalyst type -4	35 mm WC	(see graph page 5)
Catalyst type -2E	3 mm WC	(see graph page 6)

The availability of various element types (or modules) allows variation of entry surface area and pressure drop in relation of processed gas volume.

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In case of space limitation and sufficient available static fan pressure it is advisable to select catalyst modules type –3 or even –4. This assures good gas distribution over the catalyst entry face are even when a large number of elements must be used in parallel.

Restrictions on static fan pressure on the other hand make the selection of modules type –2 and –2E advisable, as they have the lower pressure drops and still give satisfactory gas distribution.

Whenever modules type –2E are selected, the gas flow must be carefully directed in order to assure good distribution over the entire entry face area. Uneven distribution can lead to overburden on certain face areas with consequent reduction in combustion efficiency.

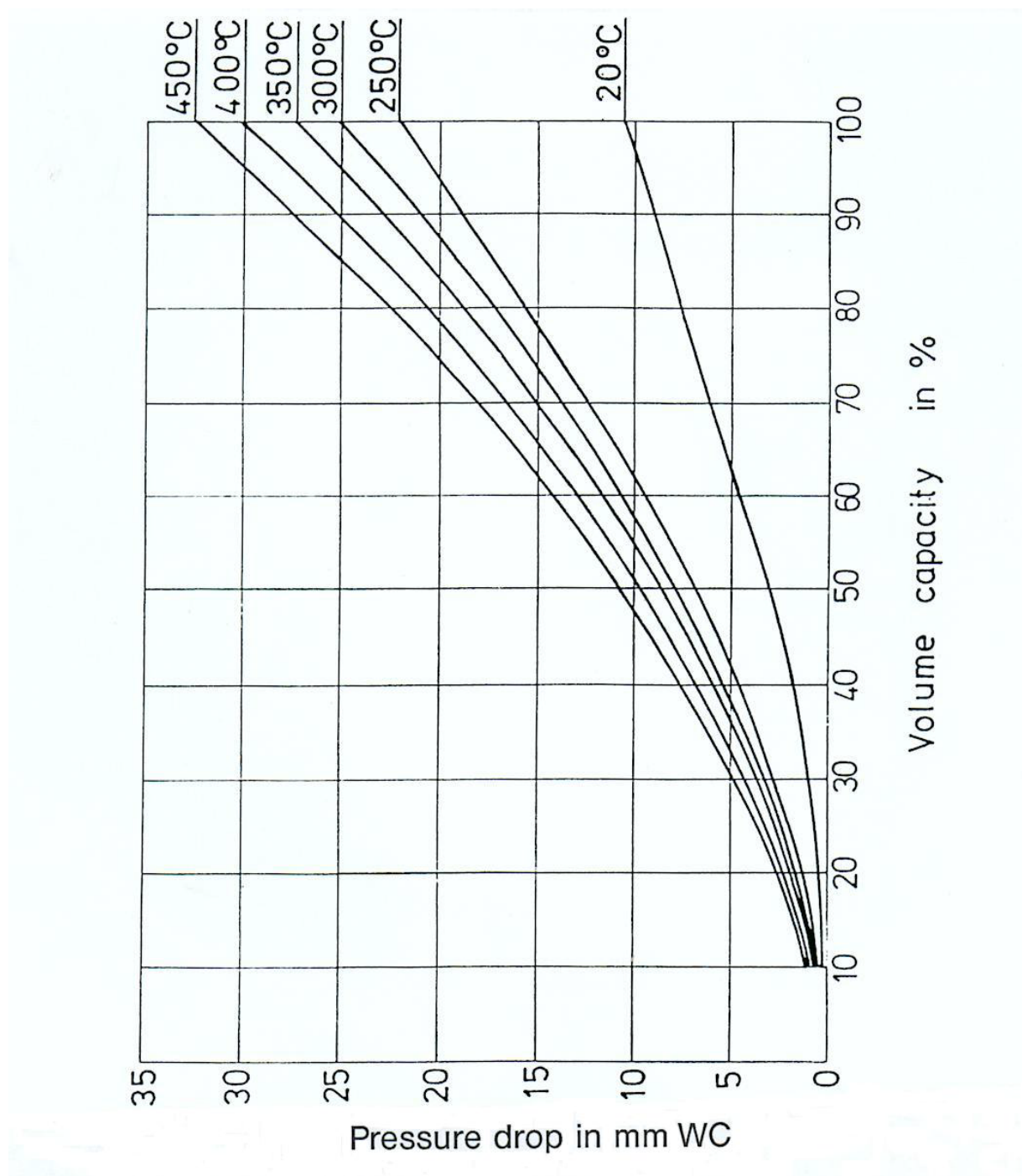
It is also important to assure a good distribution of the hydrocarbon vapours and exhaust air otherwise it can be lead to hot spots in the catalyst element with consequent damage or destruction.

In case of unfavourable distribution of the gas stream the installation of baffles into the exhaust gas duct may improve the conditions. The installation of elements type –3 and –4 will normally aid velocity equalization.

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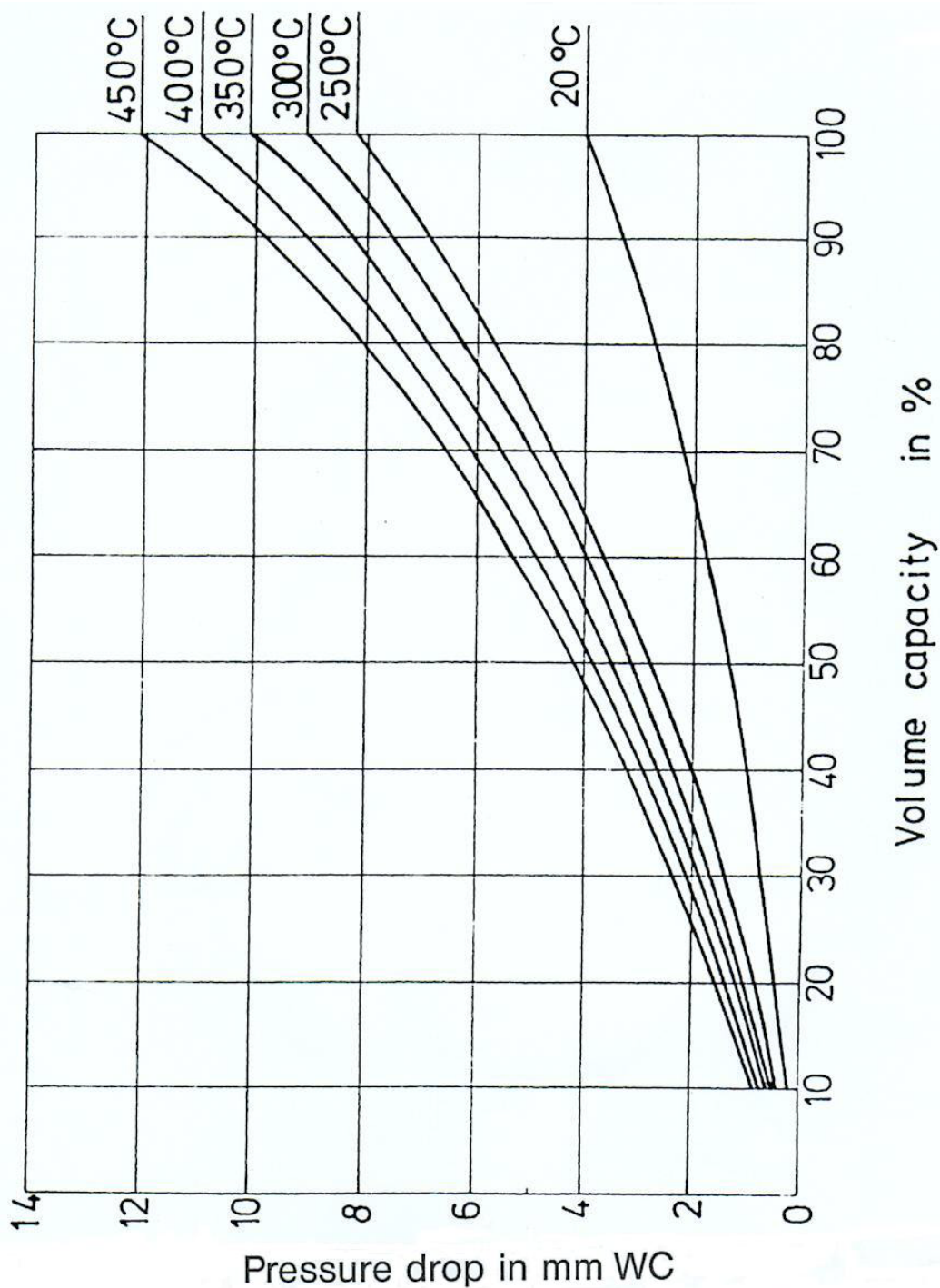
Pressure drop – catalyst element depth 2



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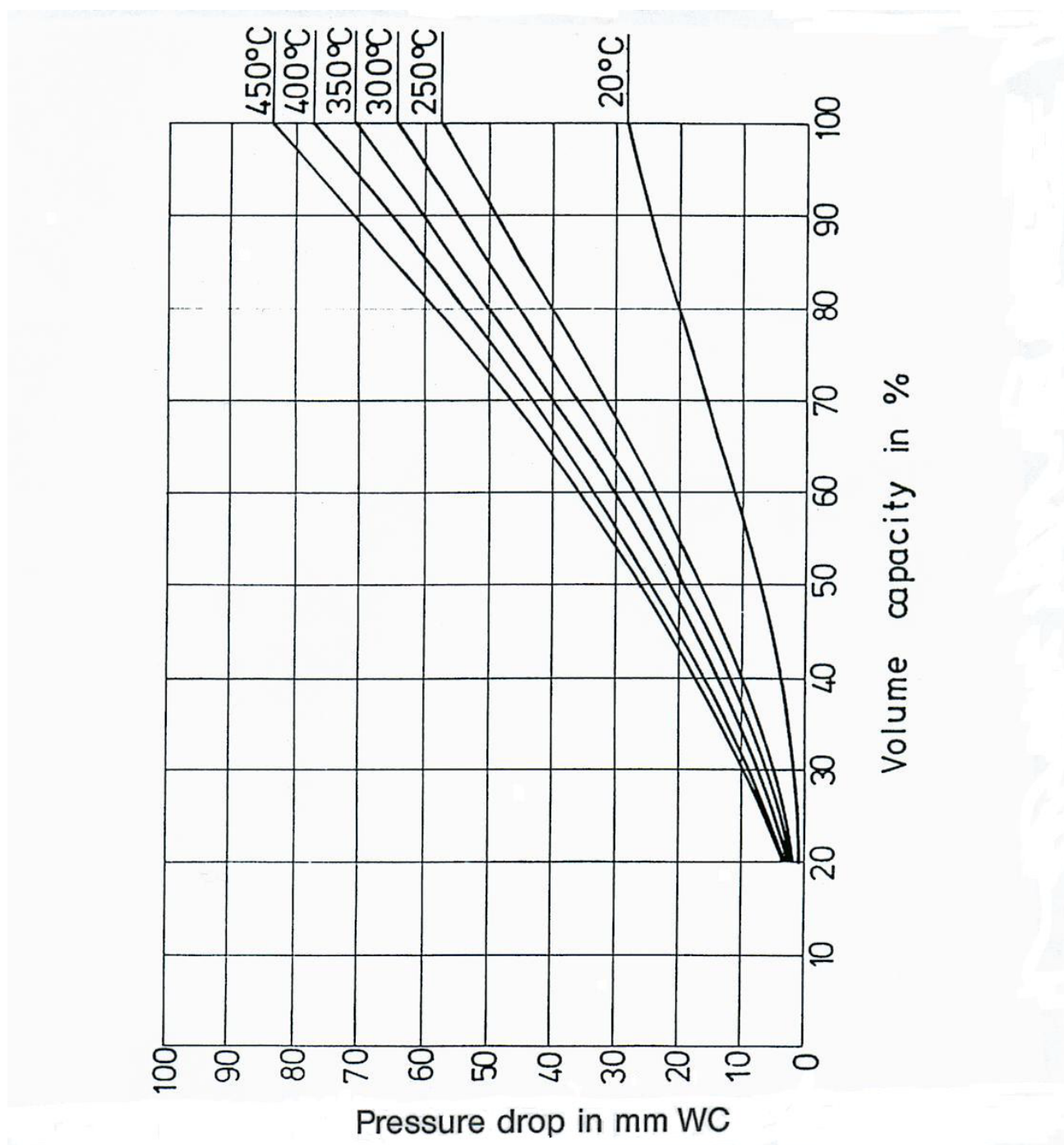
Pressure drop – catalyst element depth 3



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Pressure drop – catalyst element depth 4



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Pressure drop – catalyst element depth 2E

