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STRUCTURAL AND CHEMICAL CHARACTERIZATION OF COMMERCIAL CATALYTIC CONVERTER

Yiğit Türe¹, Emre Gürlek², Nurcan Çalış Açıkbaş¹ and Şeref Soylu²

¹ Bilecik Şeyh Edebali University, Department of Metallurgical and
Materials Science Engineering, 11230, Bilecik

² Bilecik Şeyh Edebali University, Department of Mechanical and
Manufacturing Engineering, 11230, Bilecik
seref.soylu@bilecik.edu.tr

In this study, characterization of a two way catalytic converter that is particularly used in exhaust gas after-treatment systems of light duty vehicles was examined. Chemical composition, manufacturing process and phase analysis were determined in detail by certain characterization techniques. Macrostructure investigations by optical microscopy indicated that structure type was honeycomb and dimensions of cells and frame thicknesses were 1011x997.4 µm and 116.35 µm, respectively. Additionally it was observed that extrusion method was used in order to fabricate the two way catalytic converter. Scanning electron microscopy (SEM-SE-EDX) was used for elemental analysis and size measurements of coating materials. The results indicated that three layers of coating material existed and included carbon, oxygen, aluminium, silicon, titanium and cerium. The average thickness measured as for each layer was 25 µm. XRD analyses indicated that the main phase of the catalytic converter was cordierite.

Keywords: Catalytic convertor, characterization, SEM, XRD, light duty vehicle

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