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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: MULTI-ZONE CATALYTIC CONVERTER

(57) Abstract: Provided is an exhaust article (catalyst) coated on a single substrate, such as a monolithic honeycomb having a plurality of channels along the axial length of the catalyst. Different washcoat compositions are deposited along the length the channel walls of the substrate beginning from either the inlet or outlet axial end of the substrate to form inlet and outlet catalyst layers, respectively. In the coating process, the channel walls are coated with catalyst washcoat compositions to lengths that are less than the substrates' axial length. The architecture of the resulting catalyst layers defines a plurality of zones along the length of the substrate. The properties of each zone of the catalyst can be optimized to address specific catalyst functions by manipulation of both the coating lengths and the catalyst washcoat compositions.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/19977

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B01J23/44 B01J35/04 F01N3/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B01J F01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data..

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95/00235 A (ENGELHARD CORP) 5 January 1995 (1995-01-05) page 13, paragraph 1 - page 14, paragraph 2 page 33, paragraph 2 - page 34, paragraph 2 page 16, paragraph 3 - paragraph [0004] -----	1-5
A	US 6 180 075 B1 (KREUZER THOMAS ET AL) 30 January 2001 (2001-01-30) the whole document -----	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

22 October 2003

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20.02.04

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/19977

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-5

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-5

an exhaust gas treatment article, comprising a substrate, an inlet layer and an outlet layer as defined in claim 1 and a palladium component in the inlet layer AND in the outlet layer

2. claims: 6-9

an exhaust gas treatment article, comprising a substrate, an inlet layer and an outlet layer as defined in claim 6 and a palladium component in the outlet layer and RHODIUM in the inlet layer.

3. claims: 10-26

an exhaust gas treatment article, comprising a substrate, an inlet layer and an outlet layer as defined in claim 10 and an EXTRA layer ontop of these which can be an inlet or outlet layer.

4. claims: 27-32

an exhaust gas treatment article, comprising a substrate, an inlet layer and an outlet layer as defined in claim 27 additionally containing an EXTRA outlet-layer ontop of these and an UNDERCOAT as defined in claim 27

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/19977

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