

Noble Metal Catalysts on Carbon

De Nora E-TEK® Catalysts

Platinum on Vulcan XC-72

General information: Platinum has proven to be the standard catalyst for many oxidation and reduction reactions in both acidic and basic electrolytes and provides an ideal catalyst for many electrochemical processes. De Nora has manufactured platinum on Vulcan VC-72 using our E-Tek™ recipes for over 20 years in concentrations ranging from 5wt.% to 80wt.%.

Suggested Uses

Most commonly used catalyst for PEMFC and Phosphoric Acid Fuel Cell, Cathode catalyst, Anode Catalyst. Also used as a recombination catalyst for hydrogen elimination.
Can be used as a building block for sensor elements.

Typical Metal on Carbon Loading

- ≤10% Pt for recombination or sensors
- 10% Pt for PAFC
- 20-50% Pt for PEMFC
- 50-80% Pt for DMFC or other specialized systems

Product Technical Information

Catalyst	Pt particle Angstroms	Platinum m ² /gm	Min. order grams
5% Pt	18	150	100
10% Pt	22	120	40
20% Pt	25	110	100
30% Pt	35	100	5
40% Pt	32	82	100
50% Pt	37	74	100
60% Pt	40	68	100
80% Pt	49	55	20

*For kilogram quantities contact DNT

Technical Notes

- Pt particle size in angstroms.
- Surface area for platinum only
- Vulcan XC-72 surface area is approximately 250m²/gm.

Other Platinum Catalyst of Note

30% GCC-14 Platinum on Alternate Carbon
Minimum Order: 5 grams

Description

Graphitic, corrosion resistant carbon support designed for oxygen reduction reaction in alkaline fuel cells

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HP Platinum-Ruthenium Base Metal Alloys on Vulcan XC-72

General information: These new catalysts are available with a standard Pt:Ru atomic ratio of 1:1 and from 10wt% to 80wt% total metal loading.

Suggested Uses

- Pt:Ru supported alloy electrocatalysts have shown improved tolerance to CO contaminated hydrogen fuel streams as compared to Pt at the anode of low temperature (PEM) fuel cells.
- This alloy has also found use as the catalyst for methanol oxidation in DMFC.

- Available in weight ranges of 10-80% Pt:Ru on carbon
- Standard 1:1 atomic ratio

Technical Notes

- X-ray diffraction analysis confirms the formation of a uniform Pt:Ru alloy phase with an average crystallite particle size of 20-30A even for the higher loaded catalysts.

Specifications

Metal Weight on Carbon	Min. Order in gm
10% Pt:Ru	100
20% Pt:Ru	100
30% Pt:Ru	100
40% Pt:Ru	100
50% Pt:Ru	100
60% Pt:Ru	100
80% Pt:Ru	100

Other Binary Platinum Base Metal Alloys on Vulcan XC-72

General Information: We have extended our new HP process to produce highly dispersed crystallites of a Pt-M alloy supported on carbon. These highly dispersed true alloys have been developed for PAFC and PEMFC applications. Typical atomic ratios are 1:1.

Suggested Uses

- Pt:M, where M=chromium (Cr), nickel (Ni)
- Some of these have been shown to offer improved oxygen reduction kinetics in the PAFC and PEMFC.

Specifications

Metal Weight and Alloy	Min. Order in gm
30% Pt:Ni	5
30% Pt ₃ :Cr	100

Technical Notes

- X-ray diffraction analysis confirms the formation of a true metal alloy phase with an average crystallite particle size of 30-45A

ELECTRODE TECHNOLOGIES & WATER TECHNOLOGIES



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