

Title (en)  
COMPOUNDS, PROCESSES, AND MACHINERY FOR CONVERTING METHANE GAS INTO METHANE-SULFONIC ACID

Title (de)  
VERBINDUNGEN, VERFAHREN UND MASCHINE ZUR UMWANDLUNG VON METHANGAS IN METHANSULFONSÄURE

Title (fr)  
COMPOSÉS, PROCÉDÉS ET ÉQUIPEMENT POUR CONVERTIR DU GAZ MÉTHANE EN ACIDE MÉTHANESULFONIQUE

Publication  
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Application  
**EP 19796737 A 20190425**

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Abstract (en)  
[origin: WO2019212835A2] Improved initiators, solvents, and processing equipment and methods are disclosed for improving the yields and efficiency of a manufacturing process which uses a radical chain reaction to convert methane (CH<sub>4</sub>), which is a gas under any normal conditions, into methane sulfonic acid (MSA), a liquid. MSA is useful and valuable in its own right, and it also can be processed to create desulfured fuels and other valuable chemicals. A preferred type of initiator combination has been identified, comprising at least two different peroxide sulfate compounds. One will act as a "primary" initiator for the chain reaction, while the other will act as a "chain-lengthening oxidant", which can eliminate chain-terminating species, such as sulfur Di-oxide, in the MSA-forming reactor. Integrated continuous-loop processing systems also are disclosed, including a first variant which uses a mixture of sulfuric acid and MSA as the solvent, and a second variant which completely avoids sulfuric acid and uses MSA only, as the solvent. Options are also disclosed which can avoid any need for distillation, to create reduced-cost "rough grades" of MSA with purity levels which will be entirely adequate for various types of uses in bulk.

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