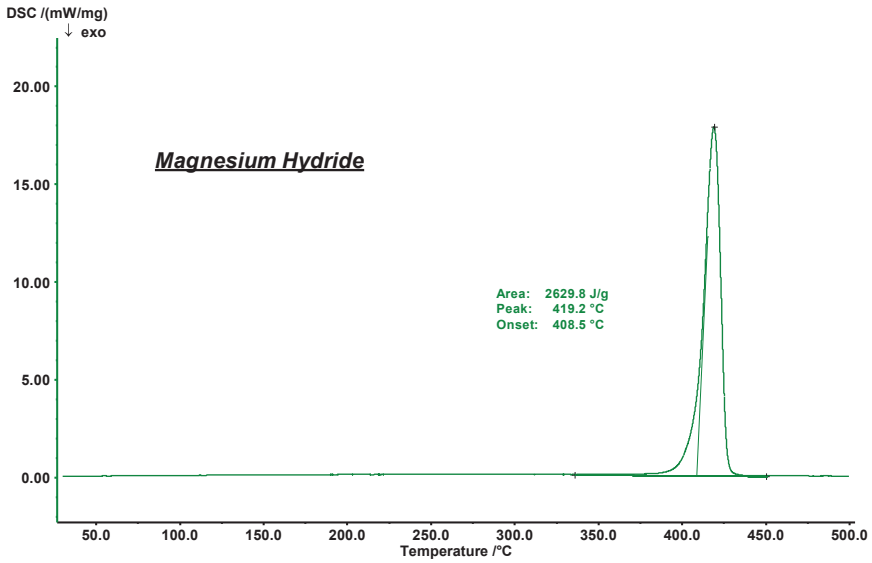
APPLICATION**SHEET**

Metals · Automotive
DSC 204 ***F1*** *Phoenix®*

Hydrogen Storage Materials – Magnesium Hydride (MgH_2)

Introduction

Efficient and safe storage and delivery of hydrogen is the major technical challenge of utilizing hydrogen as an alternative energy carrier. In metal hydrides, hydrogen is chemically fixed. This is an advantage concerning safety requirements. Due to a relatively low price and hydrogen content of 7.5%, magnesium hydride (MgH_2) is a promising hydrogen storage material.



Test Conditions

Temperature range:	RT ... 500°C
Heating/cooling rates:	5 K/min
Atmosphere:	Argon
Sample mass:	2.85 mg
Crucible:	Platinum with Al_2O_3liner, pierced lid
Purge gas flow:	40 ml/min

Test Results

DSC investigations of magnesium hydride indicate that the hydrogen release rate is relatively low up to 300°C. At 408°C (extrapolated onset), hydrogen is released in a single-step reaction. A high energy (2630 J/g) is required to get the hydrogen out of the MgH_2. Current research activities are to lower the desorption temperature and to improve its sorption rate. Structural changes are necessary in order to accelerate the hydrogen diffusion in MgH_2. Therefore, several magnesium-metal alloys are studied concerning their hydrogen absorption behavior.

NGB · Application Sheet 112 · E · 0721 · Technical specifications are subject to change.

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