

Acces PDF Energetic Polymers Binders And Plasticizers For Enhancing Performance

## **Energetic Polymers Binders And Plasticizers For Enhancing Performance**

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### **Energetic Polymers Binders And Plasticizers**

Energetic Polymers: Binders and Plasticizers for Enhancing

## Acces PDF Energetic Polymers Binders And Plasticizers For Enhancing Performance

Performance | Wiley This up-to-date overview provides the latest information on the performance, sensitivity, strength and processability aspects of propellants and explosive formulations, with the nature of polymer binder/plasticizer as the variable factor.

### **Energetic Polymers: Binders and Plasticizers for Enhancing ...**

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polymer binder/plasticizer as the variable factor. Apart from applications, this monograph explores the principles behind energetic polymers, while discussing the synthetic routes and energetic characteristics of individual family of energetic polymers.

### **Energetic Polymers: Binders and Plasticizers for Enhancing ...**

Energetic binders are polymers which crosslink explosive ingredients together with a plasticiser into a tough yet flexible three-dimensional network. Plasticisers are typically added both to facilitate processing and to improve mechanical properties of the final cured formulation. This review comprises two main sections.

### **Energetic Polymers and Plasticisers for Explosive ...**

Energetic binders could also be paired with chlorine-free

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energetic oxidizers to synergistically provide a specific impulse exceedingly higher than the current formulation while reducing pollution. A comprehensive evaluation of the synthesis, mechanical properties, and performance of various trending and overlooked energetic polymers is described.

### **Review of novel energetic polymers and binders - high ...**

Polymers as Binders and Plasticizers – Historical Perspective. Ever since the introduction of nitrocellulose (NC) as an explosive fill in the 1850s, polymers have contributed considerably to advancements in the technology of both propellants and explosives. In addition to the specific instance of the use of NC polymer in explosive fills, applications of polymers have been most extensive in binders and plasticizers. Over the years, with the maturity of composite propellant and polymer bonded ...

### **1 Polymers as Binders and Plasticizers - Historical ...**

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These energetic polymer based plasticizers are structurally similar to binder matrix and resist the migration due to enhanced miscibility. Low molecular weight ( $M_w = 650$  to  $800$  g/mole) GAP polymers have been developed as efficient plasticizers to improve the mechanical properties of GAP binder.

### **Energetics Research Institute**

This up-to-date overview provides the latest information on the performance, sensitivity, strength and processability aspects of propellants and explosive formulations, with the nature of polymer binder/plasticizer as the variable factor. Apart from applications, this monograph explores the principles behind energetic polymers, while discussing the synthetic routes and energetic characteristics of individual family of energetic polymers.

**Energetic Polymers | Explosives and Propellants ...**

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Energetic polymers (e.g. nitro or azido derivatives of polymers) can be used as a binder to increase the explosive power in comparison with inert binders. Energetic plasticizers can be also used. The addition of a plasticizer lowers the sensitivity of the explosive and improves its processibility. Insults (potential explosive inhibitors)

### **Polymer-bonded explosive - Wikipedia**

Polybutadiene-compatible, energetic nitrate ester plasticizers of aliphatic hydroxyl compounds, having from 6 to 18 carbon atoms per molecule, and a carbon/nitrate-group (C/NO<sub>3</sub>) ratio of 3 to 8 are described. The plasticizers allow to reduce the solids content of PBD-propellant compositions, resulting in significantly improved processability and, in many instances, also better mechanical ...

### **US5578789A - Energetic plasticizers for polybutadiene-**

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**type ...**

Energetic Polymers: Binders and Plasticizers for Enhancing Performance (Hardback) How Ghee Ang, Sreekumar Pisharath  
Published by Wiley-VCH Verlag GmbH, Germany (2012)

## **3527331557 - Energetic Polymers: Binders and Plasticizers ...**

A plasticizer (UK: plasticiser) is a substance that is added to a material to make it softer and more flexible, to increase its plasticity, to decrease its viscosity, or to decrease friction during its handling in manufacture.. Plasticizers are commonly added to polymers such as plastics and rubber, either to facilitate the handling of the raw material during fabrication, or to meet the ...

## **Plasticizer - Wikipedia**

Ang HG, Pisharath S (2012) Energetic polymers: binders and plasticizers for enhancing performance, 1st edn. Wiley-VCH



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GmbH & Co, KGaA, Weinheim Google Scholar. 62. Chan ML, Roy EM, Turner A (1994) Energetic binder explosive. US Patent #5,316,600 Google Scholar. 63. Ampleman G (1993) Glycidyl azide polymer.

### **Energetic Polymers: Synthesis and Applications | SpringerLink**

The nitrate esters (NEs) or GAP oligomer were used as energetic plasticizers at various ratios to the polymers. The GAP/PCL binders held the plasticizers much more than the GAP/PEG binders did. The glass transition temperatures ( $T_g$ ) of segmented copolymeric binders were more dependent on the plasticizer level than the PEG or PCL content.

### **Characterization of the Plasticized GAP/PEG and GAP/PCL**

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Energetic binders are polymers which crosslink explosive

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ingredients together with a plasticiser into a tough yet flexible three-dimensional network. Plasticisers are typically added both to...

### **Energetic Polymers and Plasticisers for Explosive ...**

Abstract The aim of this thesis was the development and investigation of new energetic polymers and plasticizers, on the basis of different polymer backbones or organic compounds with varying energetic or nitrogen-rich functional groups, along with the syntheses of suitable precursors for further (polymeric) processing.

### **Energetic polymers and plasticizers based on organic ...**

A castable, energetic, plastic-bonded explosive containing glycidyl azide polymer GAP an energetic polymer binder combined with the energetic plasticizers trimethyloethane trinitrate TMETN and trimethylene glycol dinitrate TEGDN or

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bisdinitropropyl formal and acetal mixture BDNPFA, and the explosive solid cyclotetramethylene tetranitramine HMX or cyclotrimethylene trinitramine RDX having the desirable mechanical properties, insensitivity, and excellent aging properties at much higher solids ...

### **Energetic Binder Explosive.**

Therefore, some new energetic binders and plasticizers were recently developed , , , , and their applications in propellants remedied the shortage of energy performance. Among them, glycidyl azide polymer (GAP) has drawn tremendous attention due to its high formation enthalpy, high density and low sensitivity.

### **Simulation of GAP/HTPB phase behaviors in plasticizers and ...**

Herein, two nonmigratory norbornane-based reactive plasticizers

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(NRPs) are attached covalently to poly (glycidyl azide-co-tetrahydrofuran) (PGT)-based polyurethanes (PUs), offering a reliable,...

### **Fabrication of polyurethane binders grafted with ...**

The effect of different backbone binders on the molding, debinding, and sintering behaviors was investigated. After blending process, the feedstock using multi-polymer components exhibited more homogeneous structure compared with that using the mono-polymer ones due to the synergistic effect of multi-polymers. During solvent debinding, some

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