МЕДЛЕННЫЙ РЕЖИМ РАСПРОСТРАНЕНИЯ ПЛАМЕНИ В ГОРЮЧЕЙ ВСПЕНЕННОЙ ЭМУЛЬСИИ*

Б. В. Кичатов[1], А. М. Коршунов[2], А. Д. Киверин[3], Е. Е. Коршунова[4]

Аннотация: Горючая вспененная эмульсия представляет собой многофазную систему, состоящую из пузырей кислорода, диспергированных в эмульсии. Подобные горючие системы обладают рядом уникальных свойств, например, если пена содержит даже 95% по массе воды, то она сохраняет свойство горючести. Подробно рассматривается один из возможных режимов горения пены — медленный режим распространения пламени. Проанализировано влияние стабилизатора пены на скорость распространения пламени и пределы горения. В частности, установлено, что при уменьшении концентрации стабилизатора в пене пределы распространения пламени сужаются. Этот вывод подтверждается результатами экспериментального исследования по влиянию концентрации додецилсульфата натрия на горючесть вспененной эмульсии на основе толуола и изооктана.

Ключевые слова: скорость пламени; пена; эмульсия; капли; стабилизатор; пределы горения

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[1]Объединенный институт высоких температур Российской академии наук, b9682563@yandex.ru
[2]Объединенный институт высоких температур Российской академии наук, korlex@yandex.ru
[3]Объединенный институт высоких температур Российской академии наук, alexeykiverin@gmail.com
[4]Объединенный институт высоких температур Российской академии наук, a9682563@yandex.ru

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SLOW REGIME OF FLAME PROPAGATION IN THE COMBUSTIBLE FOAMED EMULSION

B. V. Kichatov, A. M. Korshunov, A. D. Kiverin, and E. E. Korshunova

Joint Institute for High Temperatures of the Russian Academy of Sciences, 13, Bd. 2 Izhorskaya Str., Moscow 125412, Russian Federation

Abstract: Combustible foamed emulsion represents a multiphase system consisting of oxygen bubbles dispersed in the emulsion. Such combustible systems are characterized by a set of unique properties. For example, the foam containing even 95 %(wt.) of water is still combustible. This paper considers in details one of the probable regimes of foam combustion — slow regime of flame propagation. The experimental results are presented including the results for the foamed emulsion prepared on the base of isooctane–heptane mixture.

Keywords: flame speed; foam; emulsion; droplets; surfactant; combustion limits

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Contributors

Kichatov Boris V. (b. 1969) — Doctor of Science in technology, leading research scientist, Joint Institute for High Temperatures of the Russian Academy of Sciences, 13, Bd. 2 Izhorskaya Str., Moscow 125412, Russian Federation; b9682563@yandex.ru

Korshunov Alexey M.(b. 1979) – Candidate of Science in technology, senior research scientist, Joint Institute for High Temperatures of the Russian Academy of Sciences, 13, Bd. 2 Izhorskaya Str., Moscow 125412, Russian Federation; korlex@yandex.ru

Kiverin Alexey D. (b. 1985) — Candidate of Science in physics and mathematics, head of laboratory, Joint Institute for High Temperatures of the Russian Academy of Sciences, 13, Bd. 2 Izhorskaya Str., Moscow 125412, Russian Federation; alexeykiverin@gmail.com

Korshunova Elena E. (b. 1980) — engineer, Joint Institute for High Temperatures of the Russian Academy of Sciences, 13, Bd. 2 Izhorskaya Str., Moscow 125412, Russian Federation; a9682563@yandex.ru