

EASTMAN

Efficiency meets fast fusing

Eastman Effusion™ plasticizer for flooring



The efficient choice for flooring

Eastman Effusion™ plasticizer

Eastman Effusion™ plasticizer is a unique, fast-fusing solution that enables increased production line speeds and lower processing temperatures, allowing you to reduce your energy costs. Ideal for resilient sheet flooring, luxury vinyl tile, vinyl composite tile, and PVC-backed carpet applications, Effusion is both highly efficient and effective at lowering fusion temperatures. And it outperforms traditional “fast fusers,” such as butylbenzyl phthalate (BBP), making Effusion a viable non-phthalate alternative . . . and possibly the only plasticizer you’ll need in applications where fusion speed is paramount. When compared to traditional fast-fusing plasticizers, Effusion provides similar low-temperature processing of PVC, yet it is more efficient at lowering hardness (Table 1).

Applications

- Resilient sheet flooring
- Luxury vinyl tile
- Vinyl composite tile
- PVC-backed carpet applications



Figure 1

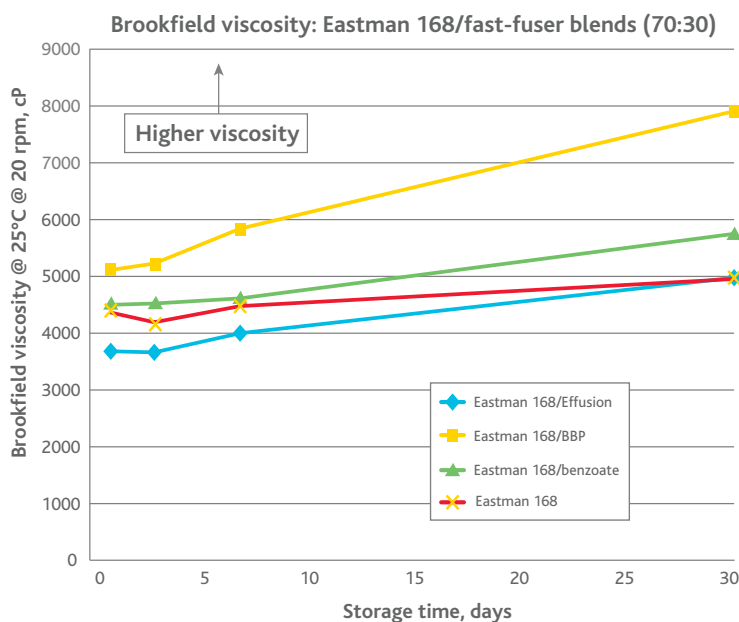


Table 1

Mechanical properties: Fast-fuser comparison

Property	Eastman Effusion 36 phr	BBP 40 phr	Benzoate plasticizer 40 phr
	7.5 phr TXIB ^a	7.5 phr TXIB	7.5 phr TXIB
Fusion temperature, °C	103	103	103
Tensile strength, MPa	16.2	16.5	16.8
Elongation at break, %	252	244	260
Modulus at 100% elongation, MPa	9.0	9.4	9.1
Shore A hardness	72	72	73
Tear resistance, kN/m	65	67	63
Tear energy, N*mm	2597	2529	2674
Brittleness temperature, °C	-14	-6	-6

^aEastman TXIB™ formulation additive



Blend to optimize

Effusion can be blended with other plasticizers, such as Eastman 168™ non-phthalate plasticizer, allowing flooring manufacturers to customize and optimize formulations to specific processing needs. Platisols made by blending these two plasticizers, for example, exhibit lower initial and aged viscosities as shown in Figure 1, while imparting similar mechanical properties when compared to other fast fusers (Table 2).

Blending plasticizers can also give brand owners more options when trying to target a replacement of traditional phthalate plasticizers. For instance, specific blends of Eastman 168 and Effusion can give equivalent processing and performance properties to phthalate plasticizers as shown in Figures 2 and 3.

Figure 2

**Eastman Effusion blends versus common phthalates:
Fusion temperature at 60 phr loading**

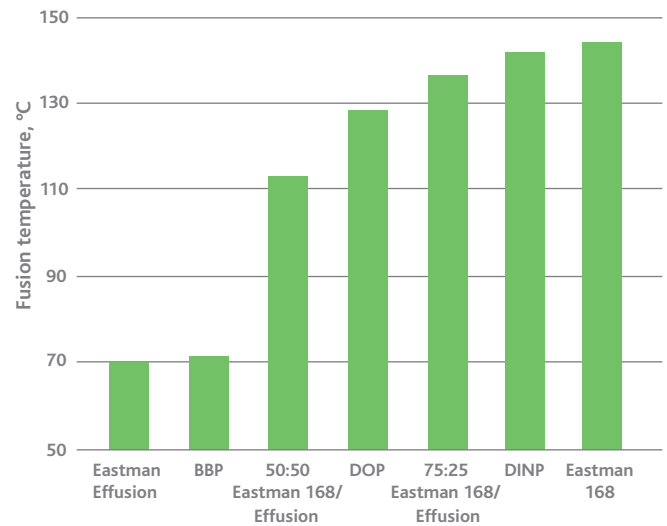
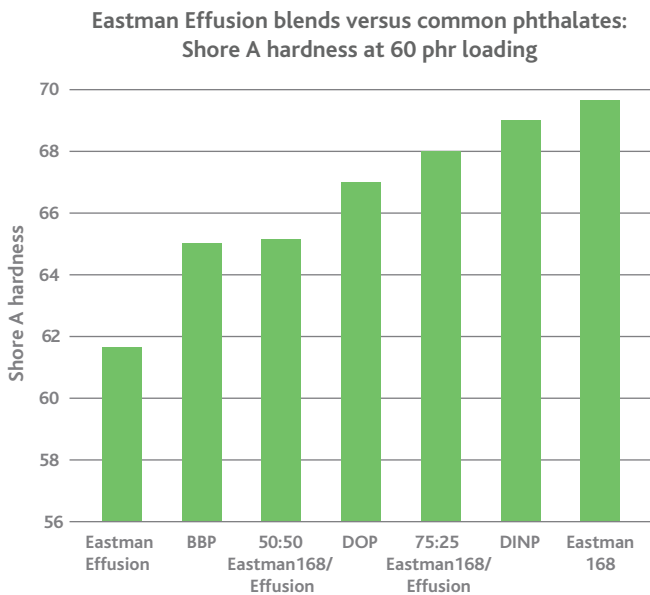


Table 2

Mechanical properties: Eastman 168 blends

Property	Eastman 168/ Effusion 70/30 at 60 phr	Eastman 168/ BBP 70/30 at 60 phr	Eastman 168/ benzoate 70/30 at 60 phr	Eastman 168 at 60 phr
Fusion temperature, °C	128	131	134	148
Tensile strength, MPa	17.4	17.2	17.5	17.9
Elongation at break, %	299	304	298	321
Modulus at 100% elongation, MPa	9.4	8.5	8.6	9.1
Shore A hardness	67	67	67	71
Tear resistance, kN/m	65	65	65	64
Tear energy, N*mm	1191	1250	1123	1136
Brittleness temperature, °C	-45	-36	-39	-47

Figure 3



Your next step: contact us

Whether your formulation requires a fast-fusing plasticizer to achieve extremely low fusion temperatures or you're looking to blend a fast fuser with a general-purpose plasticizer, Eastman Effusion is your non-phthalate solution. And when you switch, an Eastman technical specialist will be by your side to help make your transition seamless.

To find out more about Eastman Effusion as a fast-fusing non-phthalate plasticizer for flooring, call your Eastman representative today or visit www.EastmanPlasticizers.com.

Performance benefits

- Excellent solvating ability in PVC
 - Lower temperature processing of PVC
 - Faster line speeds
 - Wider processing windows
- Lower density when compared to other plasticizers in the market, which can be a benefit when selling by volume
- Excellent viscosity stability when formulated with general-purpose plasticizers, such as Eastman 168
- Improved in-process heat stability vs. BBP
- Greater efficiency at lowering hardness
 - Reduction of plasticizer usage in formulation
 - Better low-temperature flexibility

EASTMAN
The results of insight™

Eastman Chemical Company Corporate Headquarters

P.O. Box 431
Kingsport, TN 37662-5280 U.S.A.

Telephone:
U.S.A. and Canada, 800-EASTMAN (800-327-8626)
Other Locations, (1) 423-229-2000
Fax: (1) 423-229-1193

Eastman Chemical Latin America

9155 South Dadeland Blvd.
Suite 1116
Miami, FL 33156 U.S.A.

Telephone: (1) 305-671-2800
Fax: (1) 305-671-2805

Eastman Chemical B.V.

Fascinatio Boulevard 602-614
2909 VA Capelle aan den IJssel
The Netherlands

Telephone: (31) 10 2402 111
Fax: (31) 10 2402 100

Eastman (Shanghai) Chemical Commercial Company, Ltd.

Building C, No. 399 Shengxia Road,
Pudong New District
201210, Shanghai, P.R. China

Telephone: (86) 21 6120-8700
Fax: (86) 21 5027-9229

Eastman Chemical Japan Ltd.

MetLife Aoyama Building 5F
2-11-16 Minami Aoyama
Minato-ku, Tokyo 107-0062 Japan

Telephone: (81) 3-3475-9510
Fax: (81) 3-3475-9515

Eastman Chemical Asia Pacific Pte. Ltd.

9 North Buona Vista Drive
#05-01 The Metropolis Tower 1
Singapore 138588

Telephone: (65) 6831-3100
Fax: (65) 6732-4930

Although the information and recommendations set forth herein are presented in good faith, Eastman Chemical Company makes no representations or warranties as to the completeness or accuracy thereof. You must make your own determination of their suitability and completeness for your own use, for the protection of the environment, and for the health and safety of your employees and purchasers of your products. Nothing contained herein is to be construed as a recommendation to use any product, process, equipment, or formulation in conflict with any patent, and we make no representations or warranties, express or implied, that the use thereof will not infringe any patent. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS AND NOTHING HEREIN WAIVES ANY OF THE SELLER'S CONDITIONS OF SALE.

Safety Data Sheets providing safety precautions that should be observed when handling and storing our products are available online or by request. You should obtain and review available material safety information before handling our products. If any materials mentioned are not our products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be observed.

© 2014 Eastman Chemical Company. Eastman, Eastman 168, Effusion, The results of insight, and TXIB are trademarks of Eastman Chemical Company.