



**Tüdöksad Akademi 2. Ulusal Döküm Kongresi / 2<sup>nd</sup> National Foundry Congress by Tüdöksad Academy**

## **«Birincil ve İkincil A356 Alaşımının Sıvı Metal Kalitesine Tane İnceltici İlavesinin Etkisi»**

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### **5.Oturum**

**Oturum Başkanı: Prof. Dr. Ali Kalkanlı (Orta Doğu Teknik Üniversitesi)**



\*Kongre Bildirileri Kitabına kayıt masasındaki karekodlar ve web sayfamız üzerinden ücretsiz ulaşabilirsiniz!!

# Birincil ve İkincil A356 Alaşımının Sıvı Metal Kalitesine Tane İnceltici İlavesinin Etkisi

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# Motivasyon

- Tane inceltici olarak ilave edilen Al-Ti-B sıvı metal kalitesine etkisi



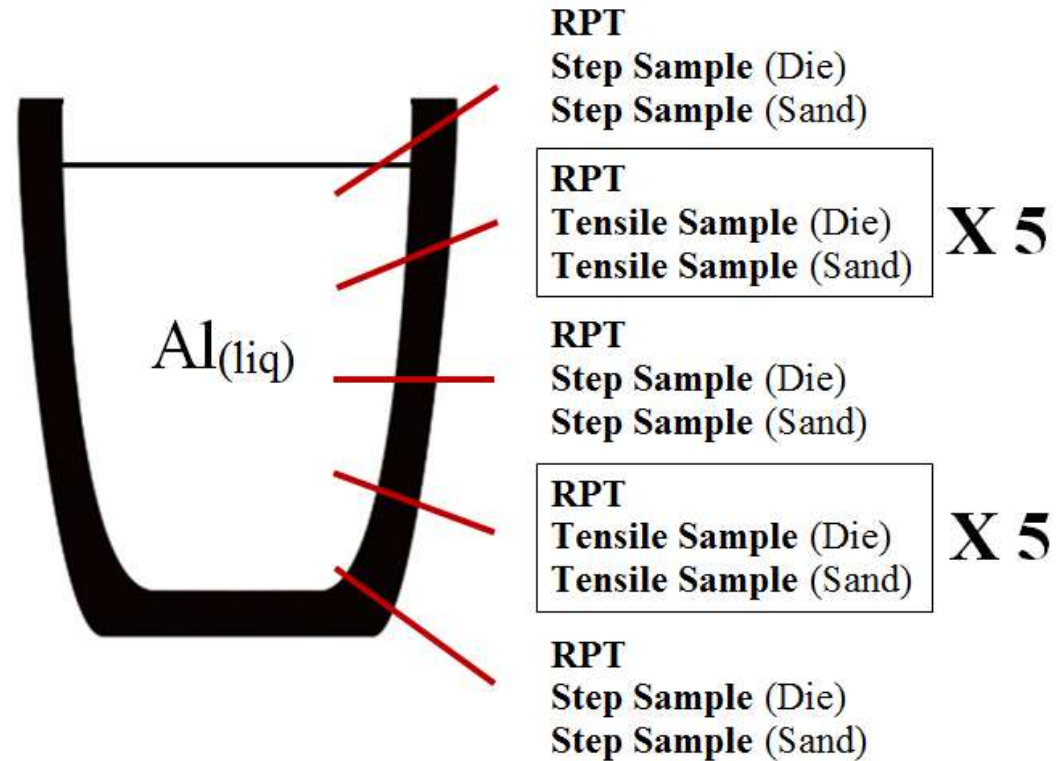
# Deneysel Çalışma

- 10 kg: primer ve sekonder A356
- 725°C rezistans fırın
- Ağ. %0 ve 0,1 Al-5Ti-1B
- Döküm hali (ısıl işlem yok)

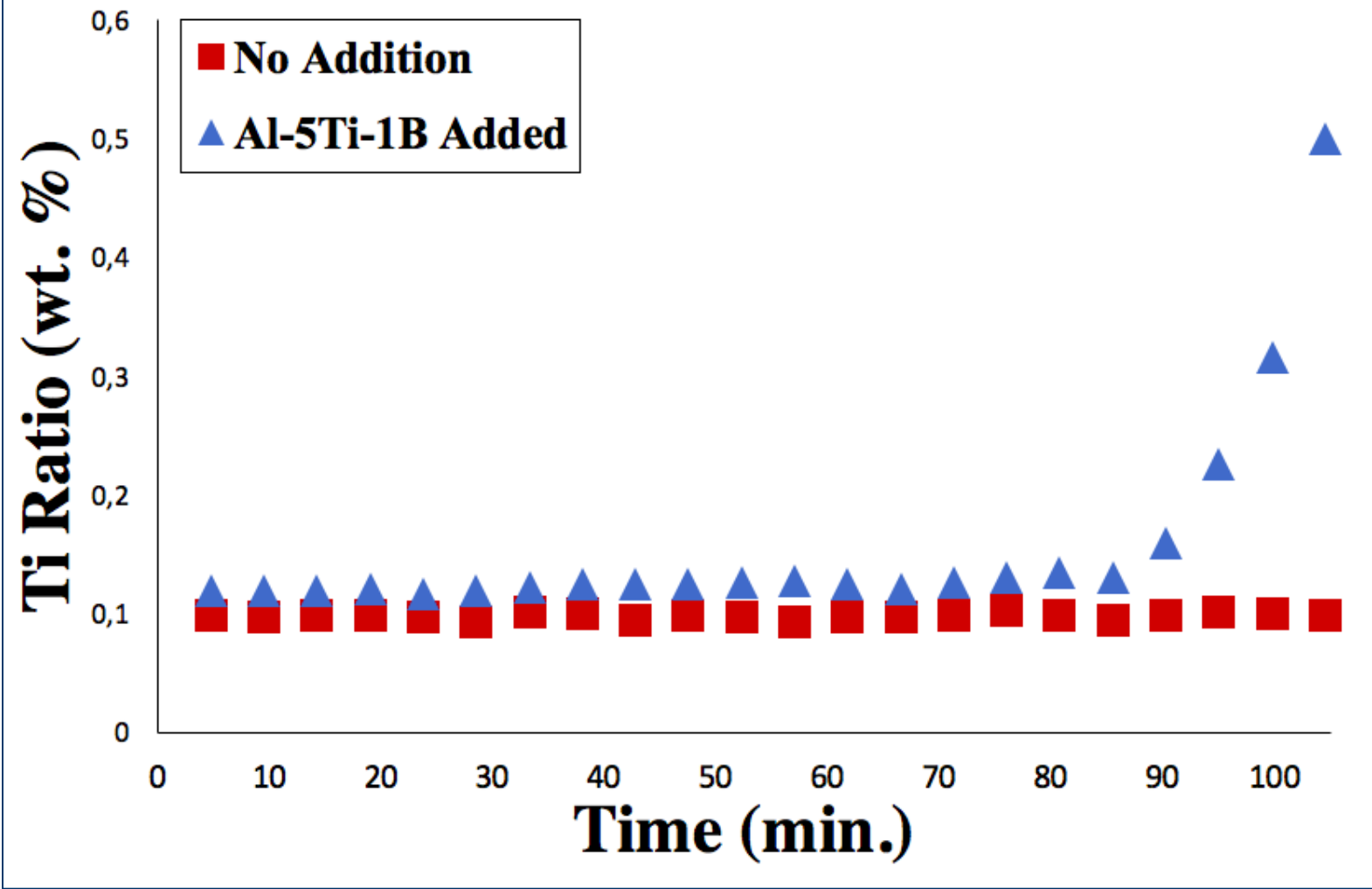
	Si	Mg	Fe	Ti	B	Sr
Primer	7.26	0.31	0.08	0.07	0.001	0.0005
Sekonder	7.31	0.26	0.13	0.11	0.001	0.008



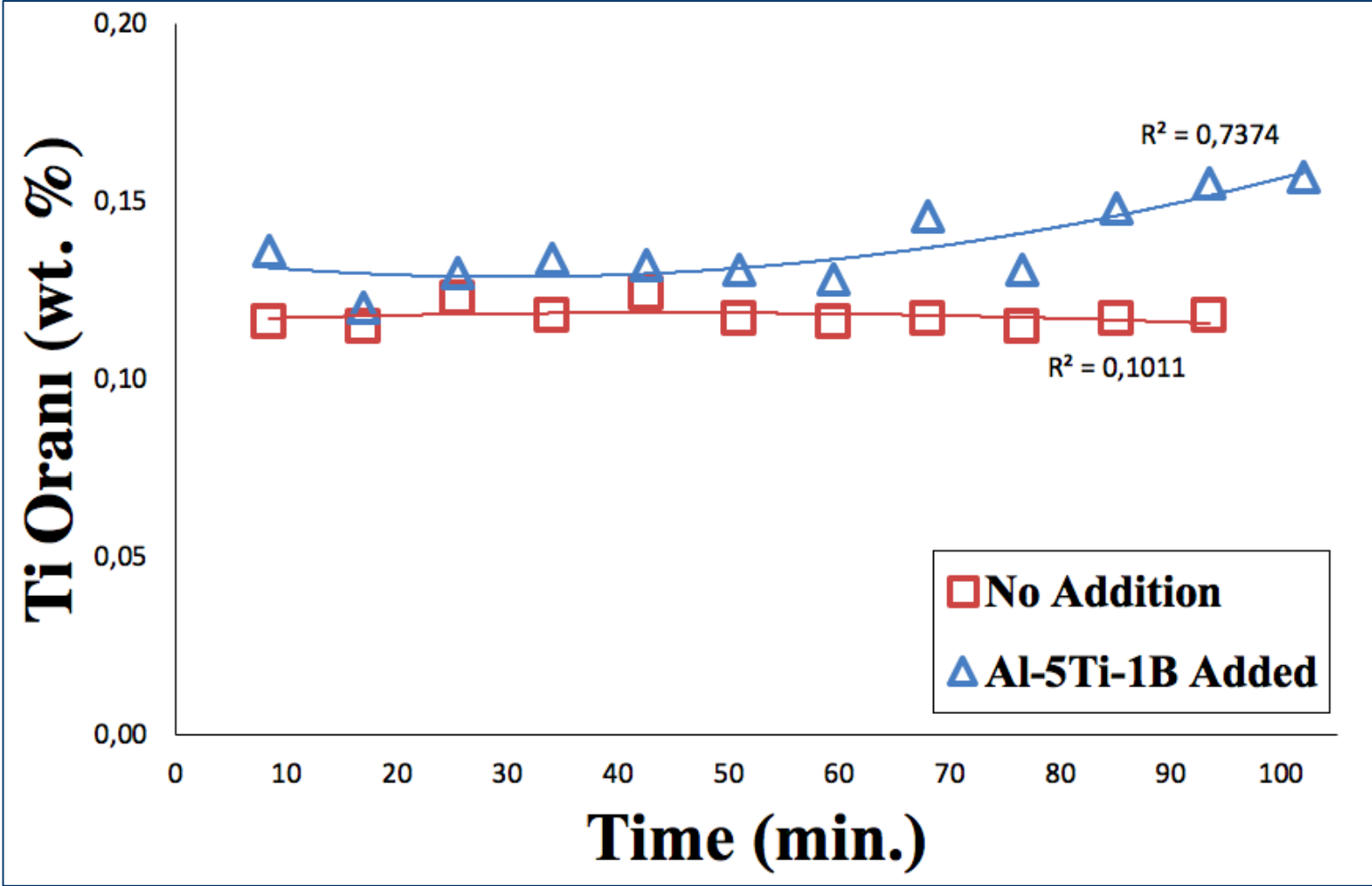
# Deneysel çalışma



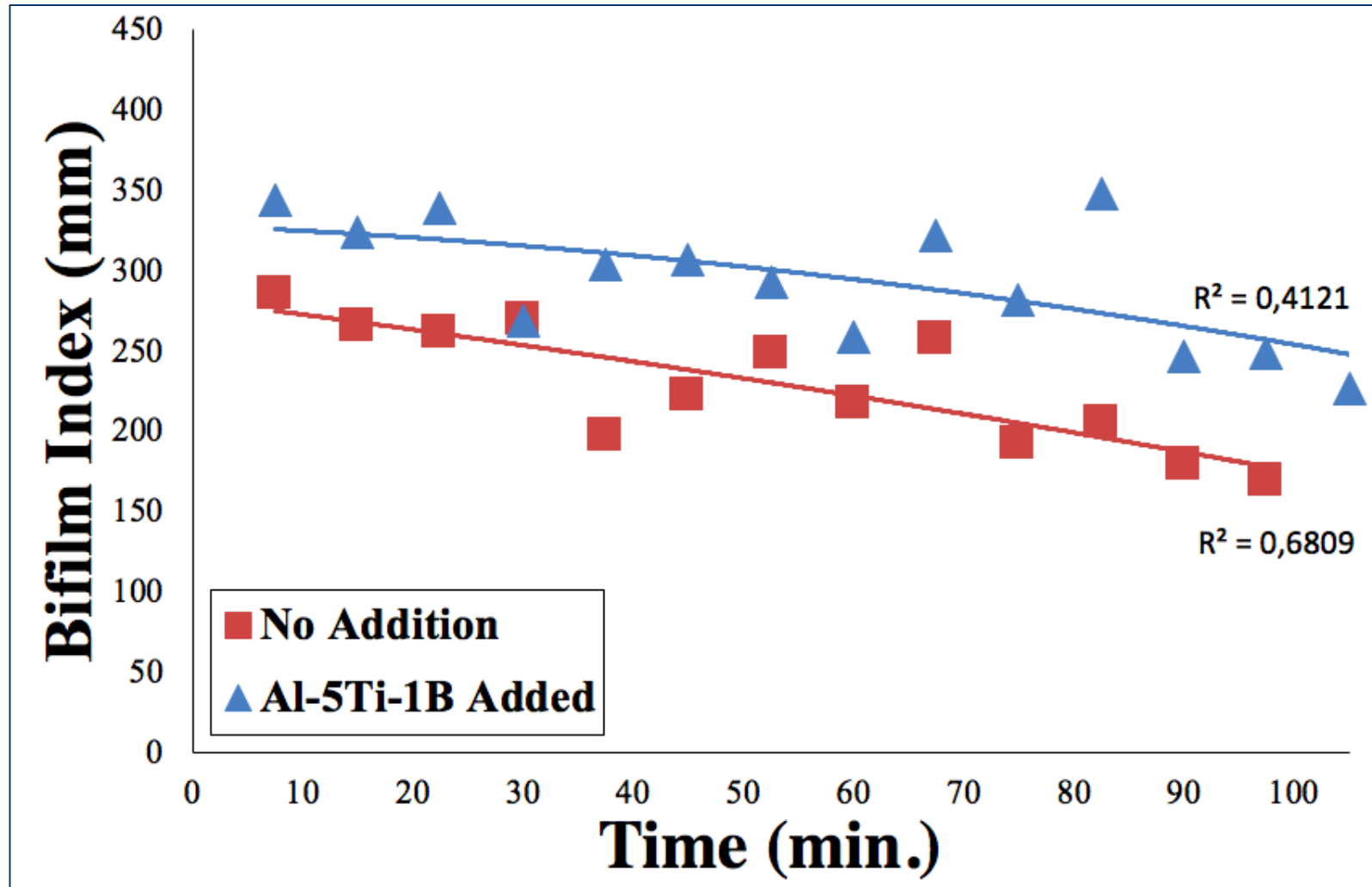
# Primer A356: spektral analiz



# Sekonder A356: spektral analiz

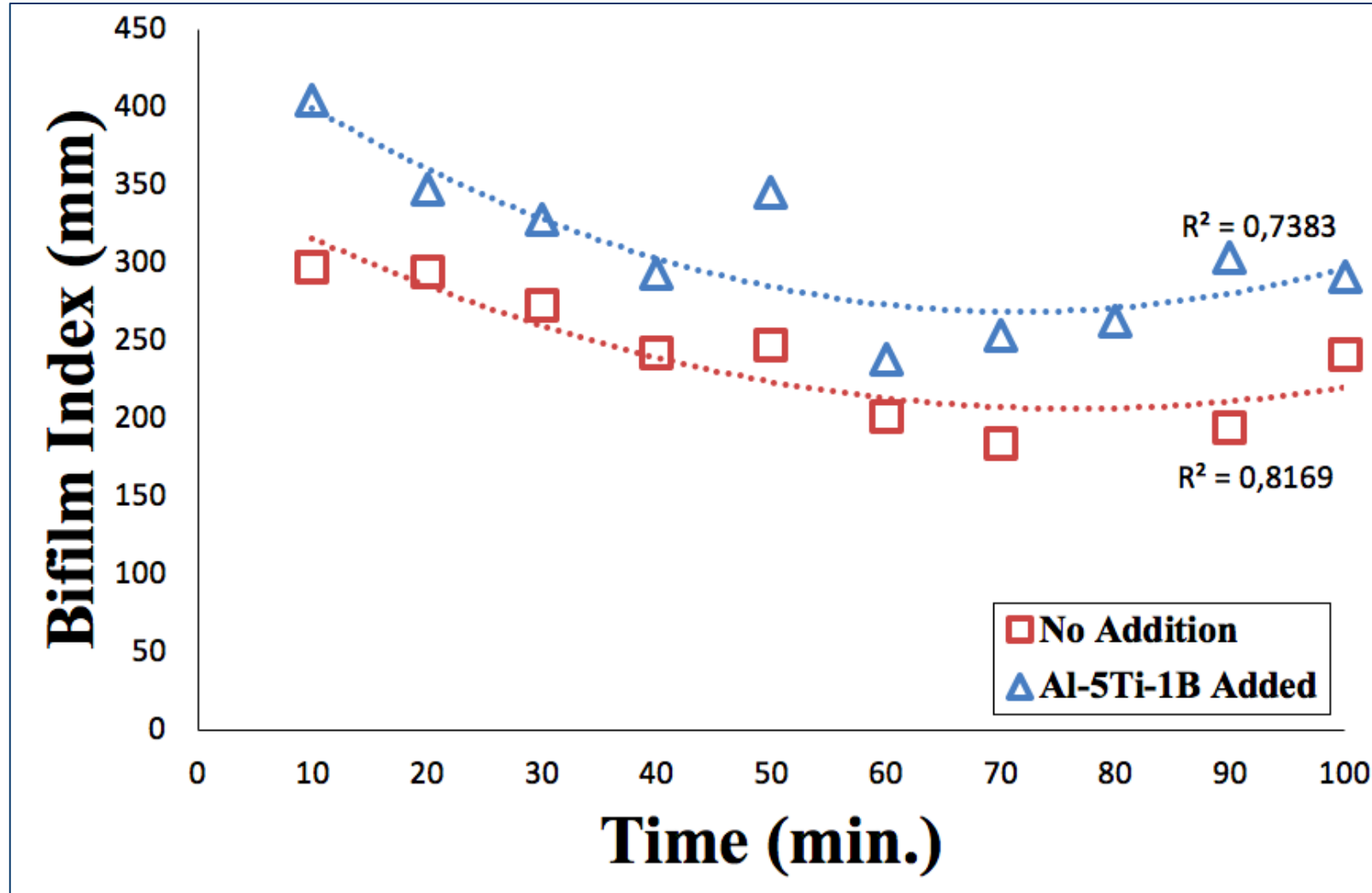


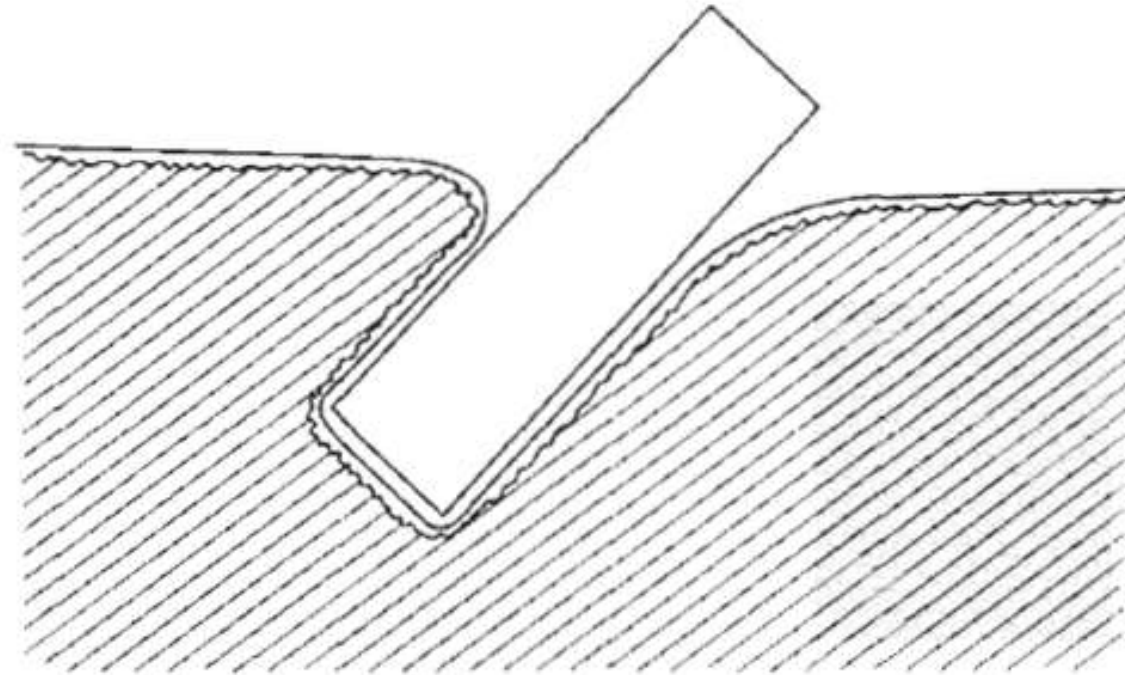
# Bifilm Index - Primer A356





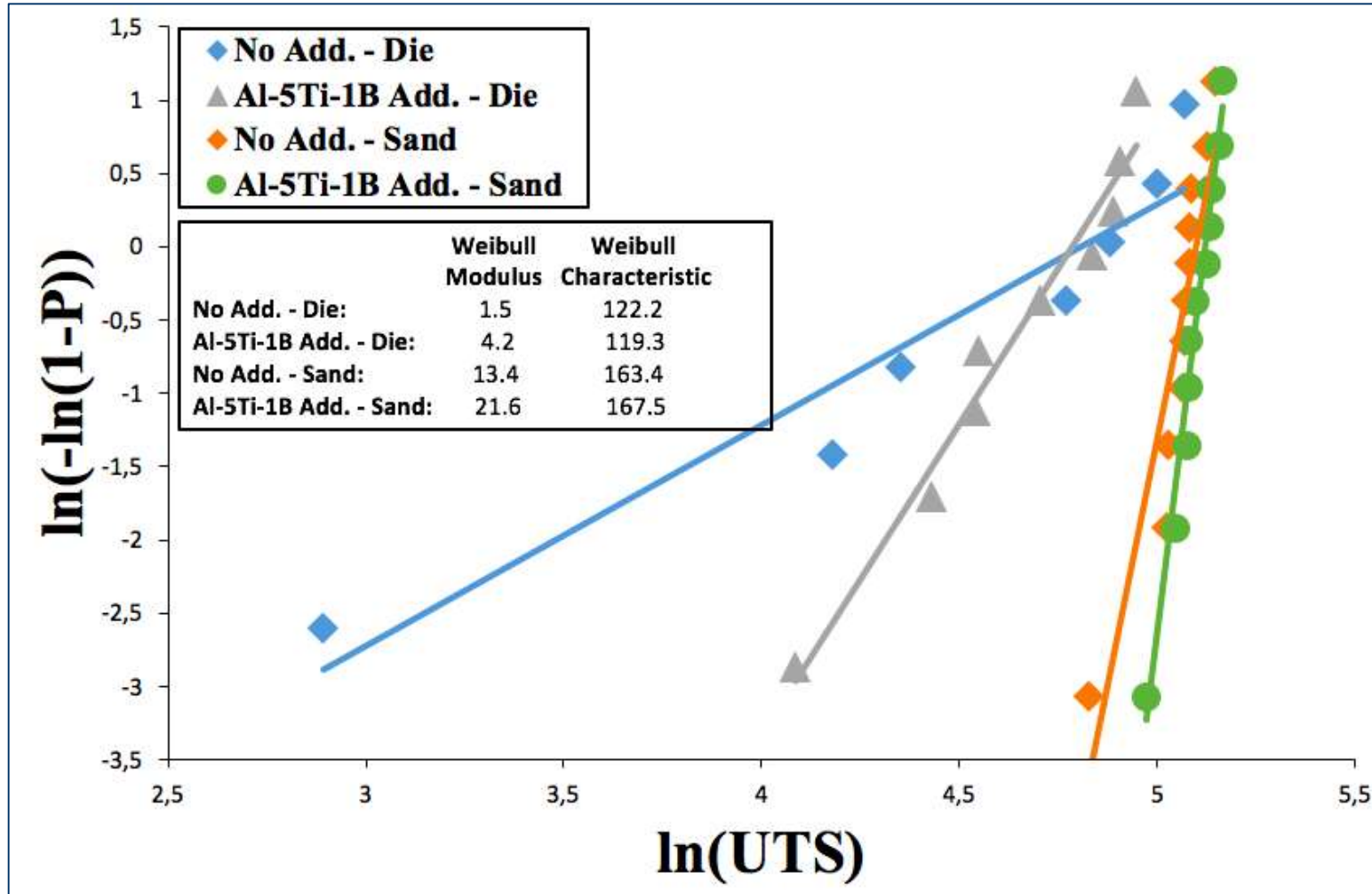
# Bifilm Index - Sekonder A356



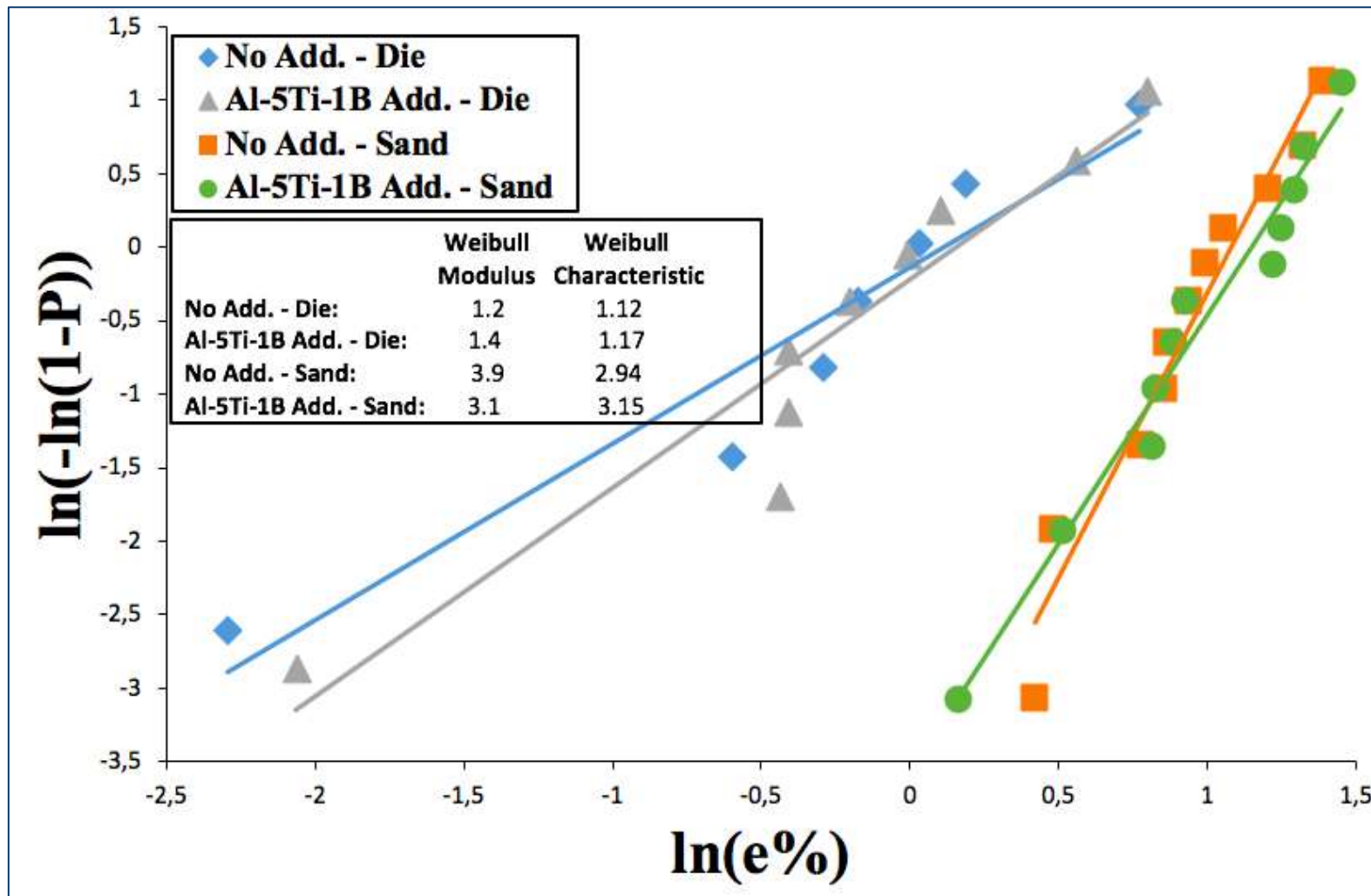


submerging of a piece of oxide

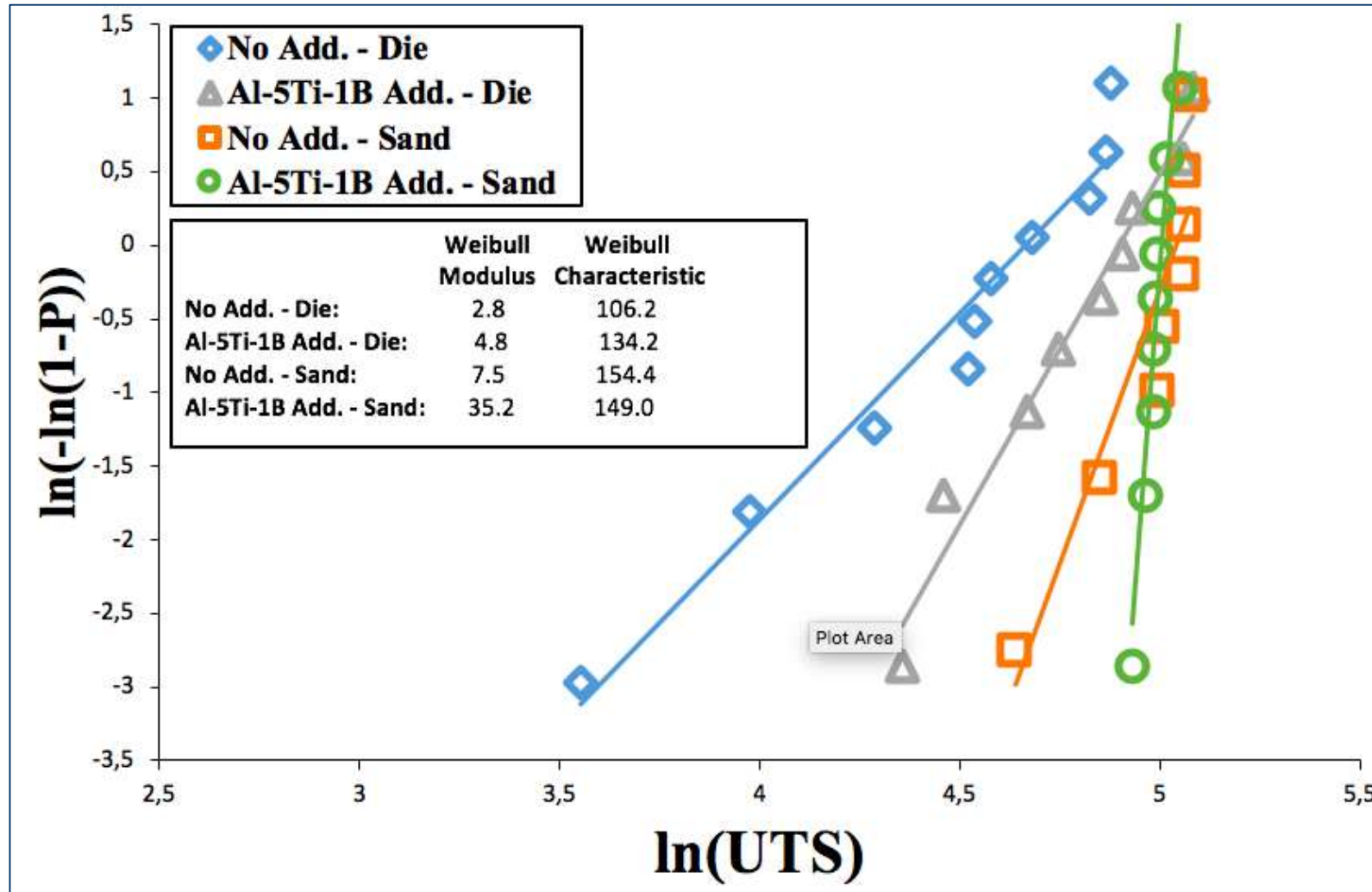
# Primer A356 – Weibull Çekme



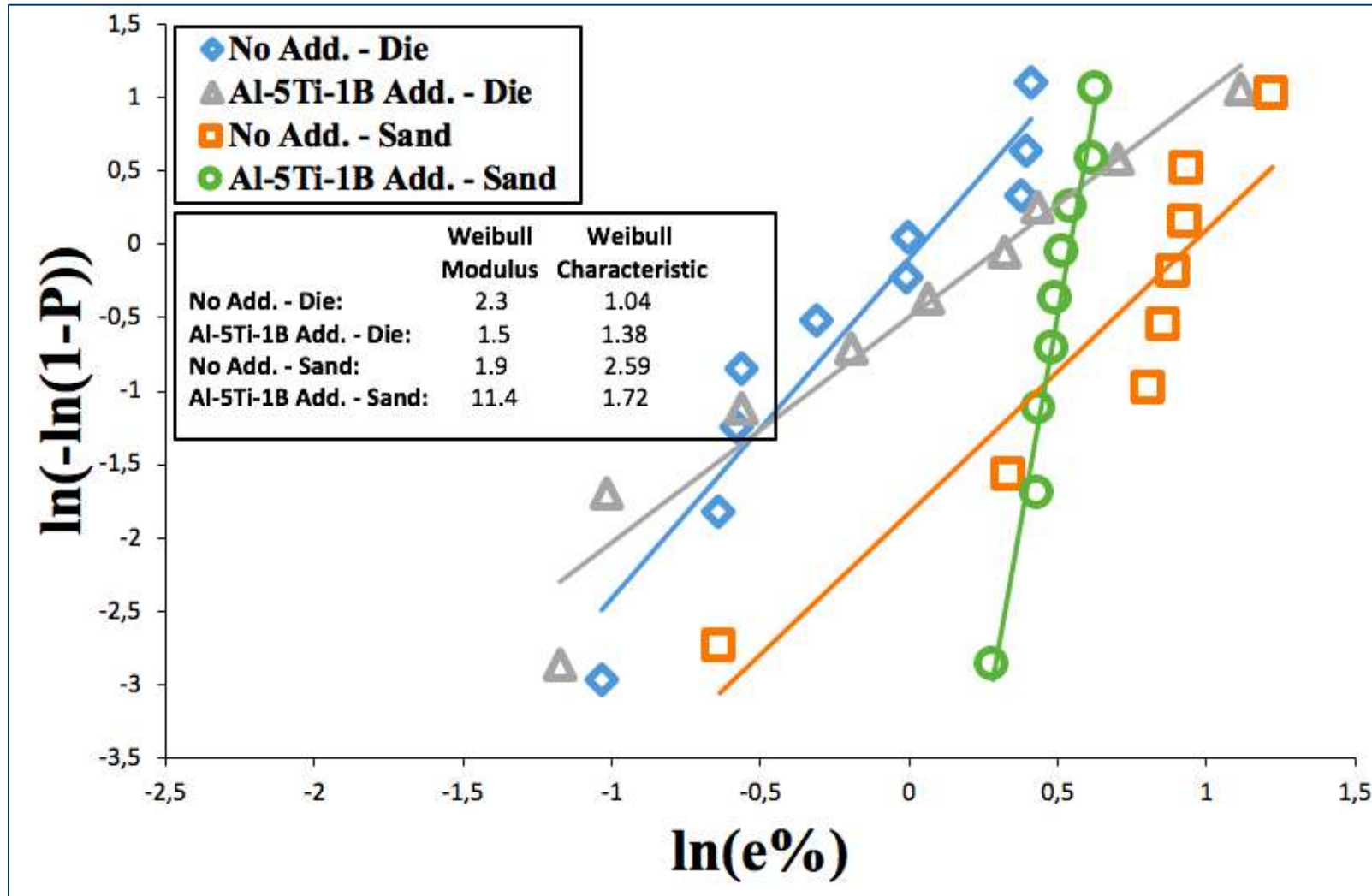
# Primer A356 – Weibull %e

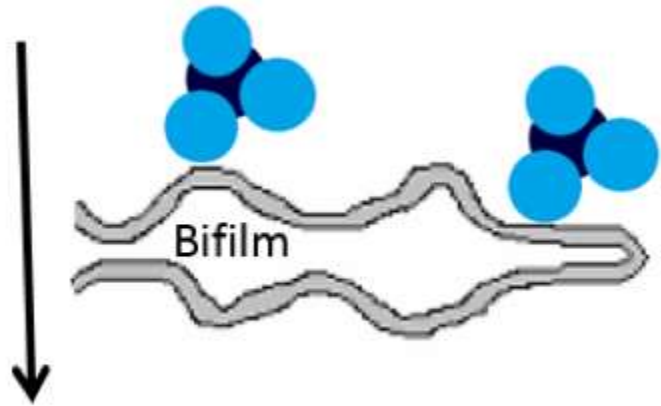


# Sekonder A356 - çekme



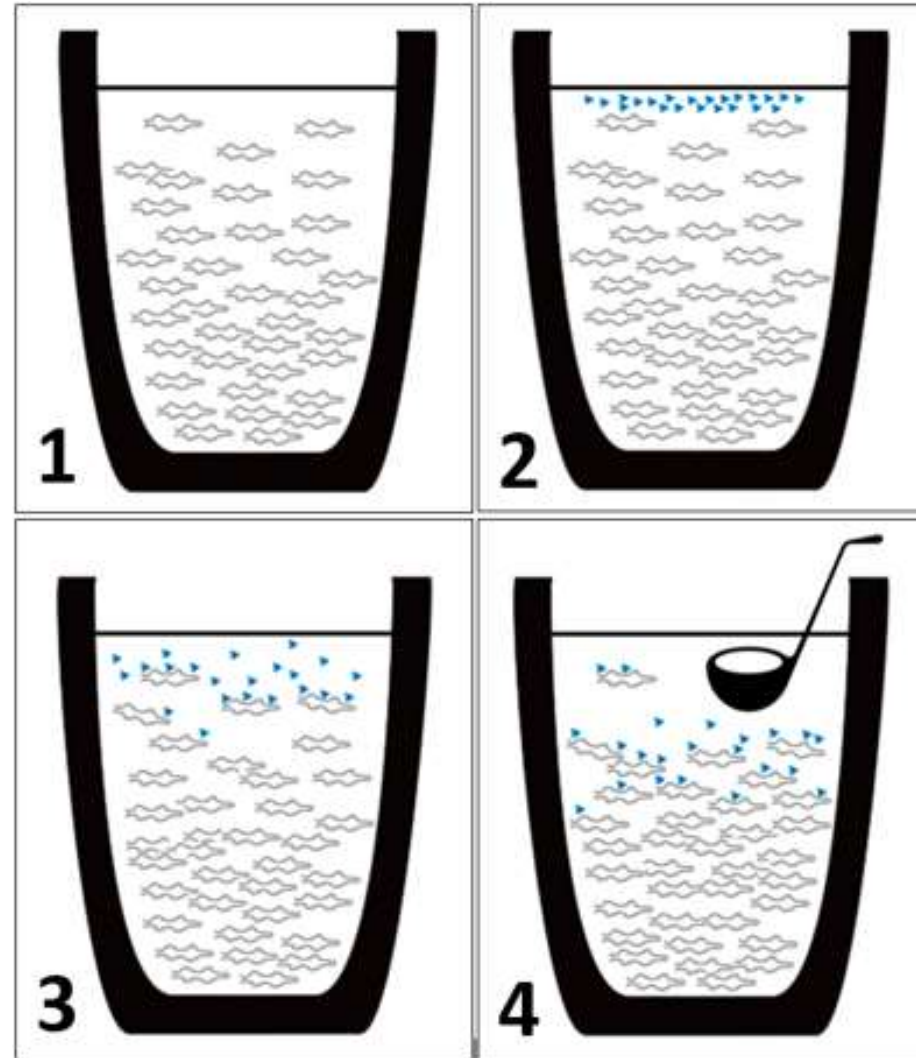
# Sekonder A356 - %e





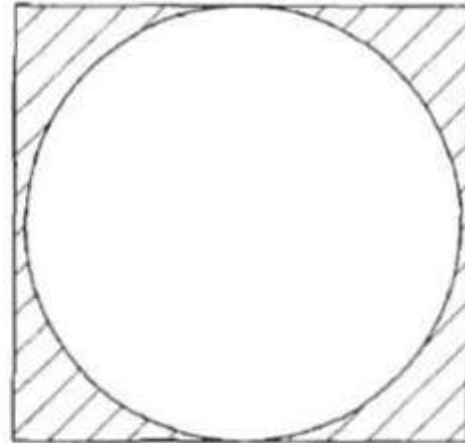
Bifilm

SIVI Al





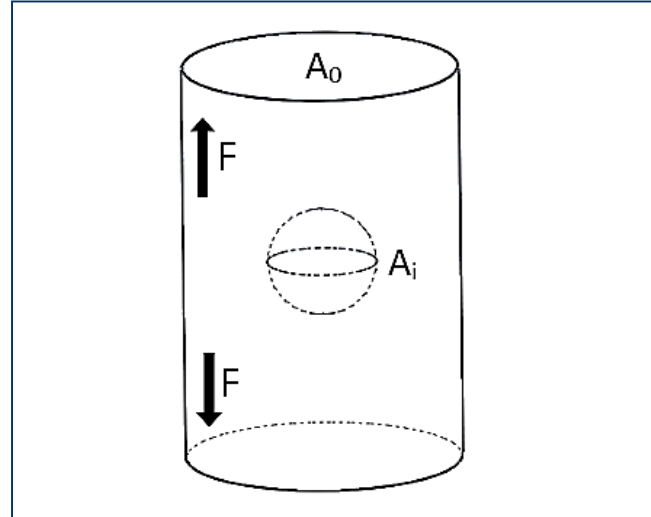
(a)



(b)



# Kırık Yüzey Analizi

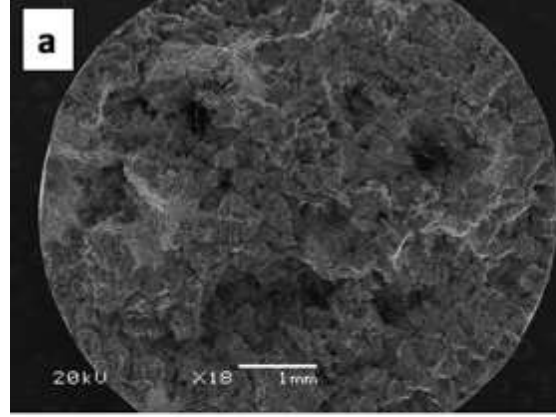


$$\text{Yük Tasiyan Alan} = A_0 - A_i$$

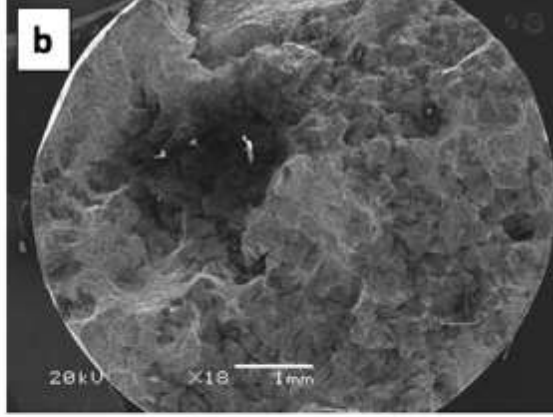
$$AFD = \frac{A_i}{A_0} \times 100$$

AFD: Area Fraction of Defects (Hata Alanı Oranı (HAO))

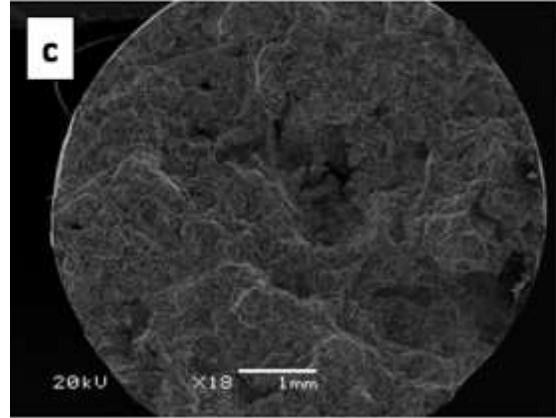
**İlavesiz  
Kokil Döküm**



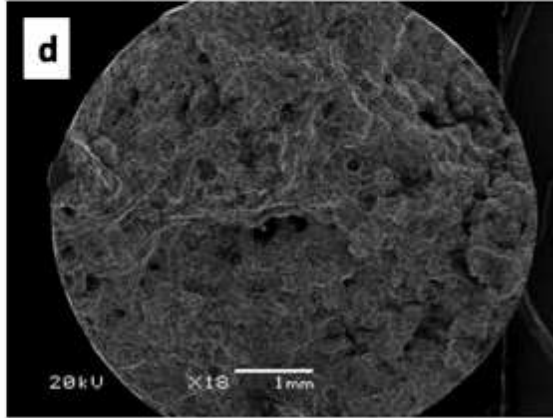
**Al-5Ti-1B İvelili  
Kokil Döküm**



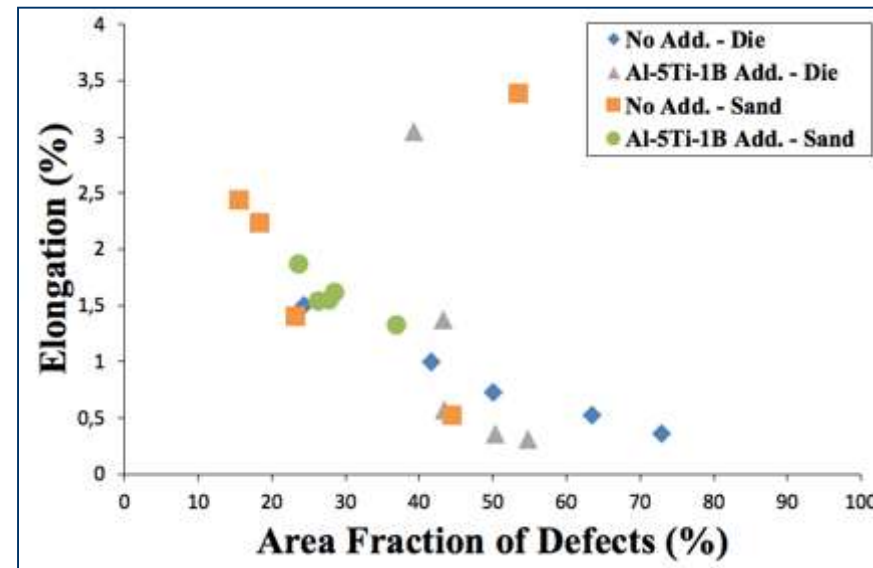
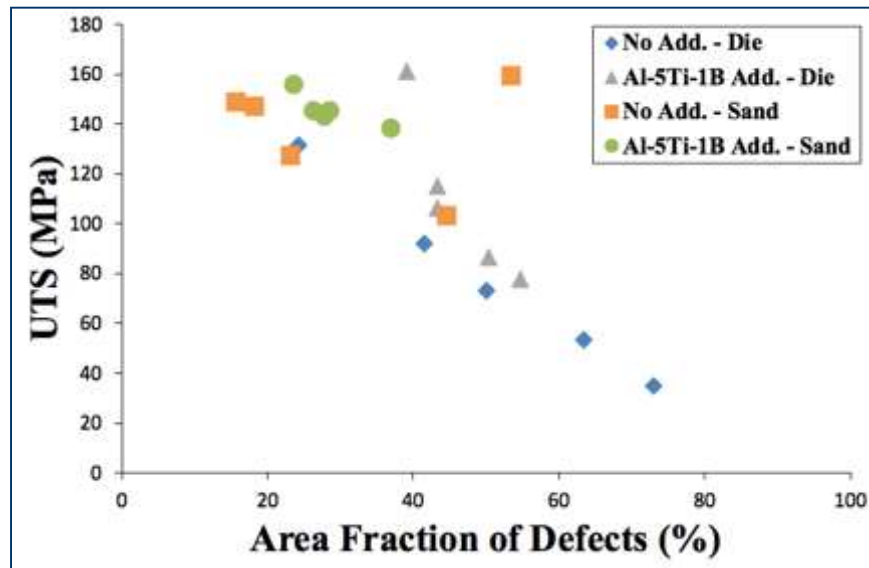
**İlavesiz  
Kum Döküm**



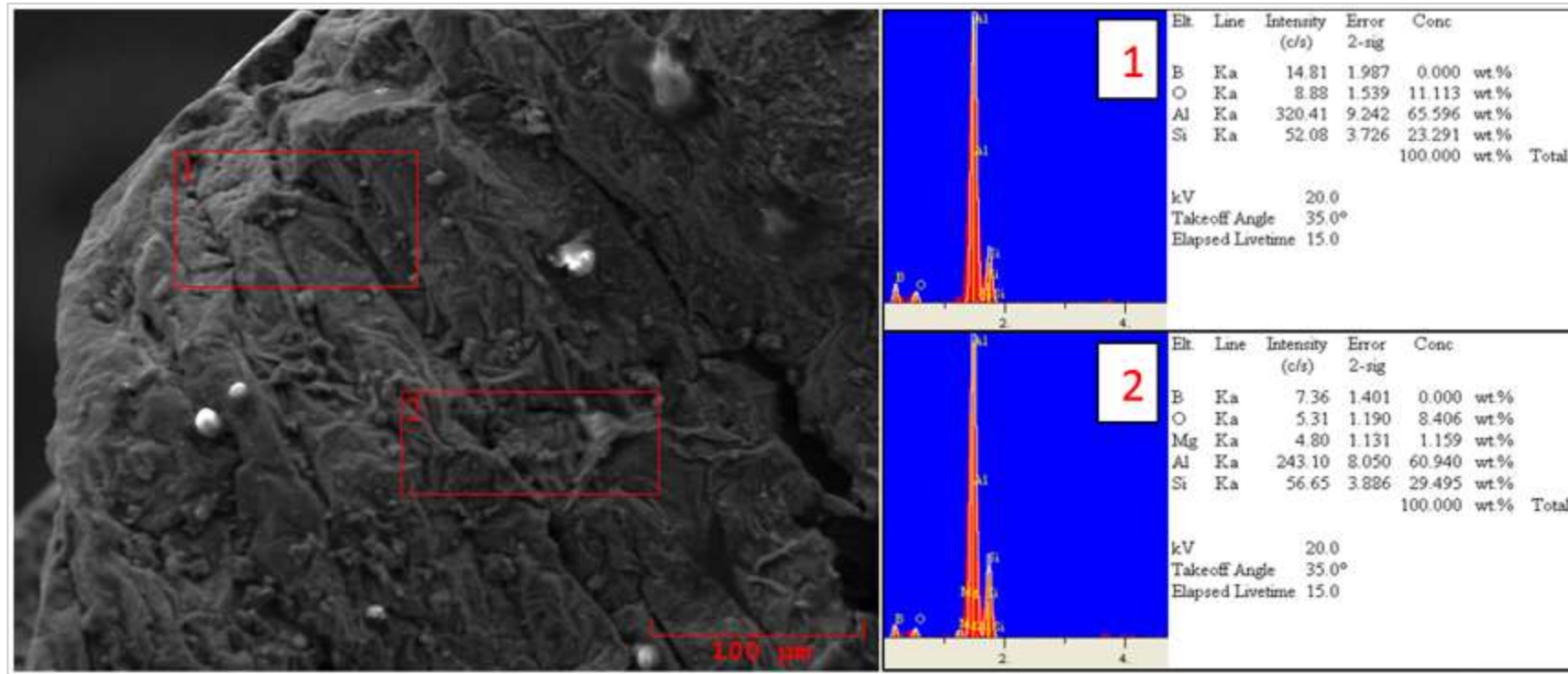
**Al-5Ti-1B İvelili  
Kum Döküm**



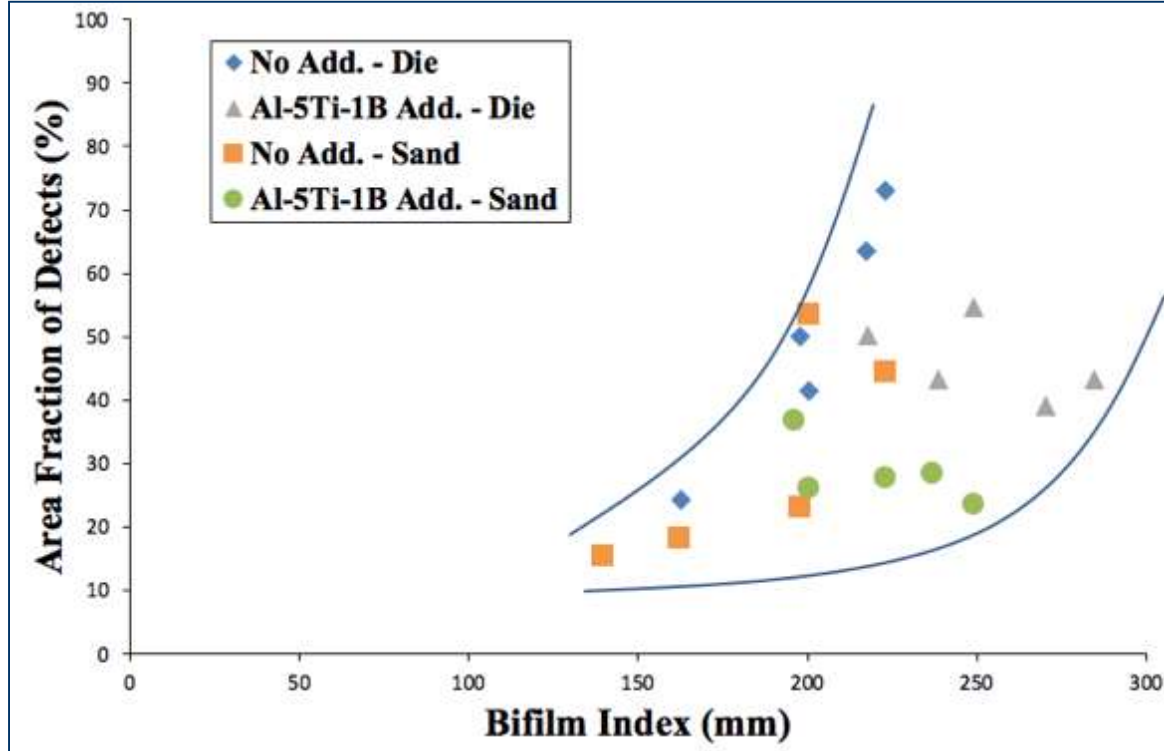
# Hata Alanı Oranı (AFD)



# Hata Alanı Oranı (AFD)



# Hata Alanı Oranı (AFD)



**Dışpınar önerisi:**

**0 – 25 mm: en iyi kalite**

**25 – 50: iyi**

**50 – 100 : kötü**

**> 150 : dökme!**

# Sonuçlar

- Ti ilavesi sıvı metal kalitesini düşürüyor
- Ti ilavesi ile bifilmli dibe çökebiliyor
- Primer alaşımda zamanla sıvı metal kalitesi artarken
- Sekonder alaşımda zamanla sıvı metal kalitesi düşüyor
- Kum kalıba yapılan dökümlerde mekanik özelliklerde daha istikrarlı ve tekrarlanabilir sonuçlar elde ediliyor
- Bifilm içeriği arttıkça mekanik özellikler dağınık bir şekilde de olsa kötüleşiyor



# Teşekkürler

