



**Metallurgists & Materials Technologists**

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Report No: EXC18 - 074  
Client: Roundel  
Attention: Steve Kenny  
Order No: R042  
Date: 03-May-2018  
Subject: Abrasion Testing of Three Coating Samples to Failure

## 1.0 INTRODUCTION

Three samples were submitted for abrasion testing in accordance with ASTM D4060.

## 2.0 PROCEDURE

### 2.1 Identification

The following identification was assigned to the sample submitted:

Exceed ID	Client ID
EXC18 - 074/1	Polycor HPL PE - Coated
EXC18 - 074/2	Z600 Galvanised
EXC18 - 074/3	Trenchcoat PE - Coated

### 2.2 Abrasion Testing

Taber abrasion testing was performed in accordance with ASTM D4060 using a CS-17 abrasive wheel.

### 2.3 Coating Thickness

The coating thickness was determined by removing a section from the original coated area and the wear scar effected area, mounted in epoxy resin, silicon carbide ground to P1200 grit, polished to a 6 micron finish, then observed under a metallurgical microscope.

### 3.0 RESULTS

#### 3.1 Abrasion Testing

Specimen	1	2	3
Cycles	80,000	8000	40,000

The coating on sample EXC18 - 074/1 did not wear through to the substrate. Samples EXC18 - 074/2 & 3 demonstrated complete failure of the coating.

#### 3.2 Coating Thickness

Specimen	Original Coating, $\mu\text{m}$	Average
1	600, 630, 550, 610, 570	592
2	30, 40, 30, 30, 30	32
3	330, 350, 330, 340, 330	336

Specimen	Wear Scar, $\mu\text{m}$	Average
1	300, 280, 280, 320, 300	296
2	10, 0, 0, 10, 0	4
3	30, 20, 30, 20, 20	24



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----- End of Report -----

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Figure 1: EXC18 - 074/1 - Before Testing



Figure 2: EXC18 - 074/1 - 20,000 Cycles

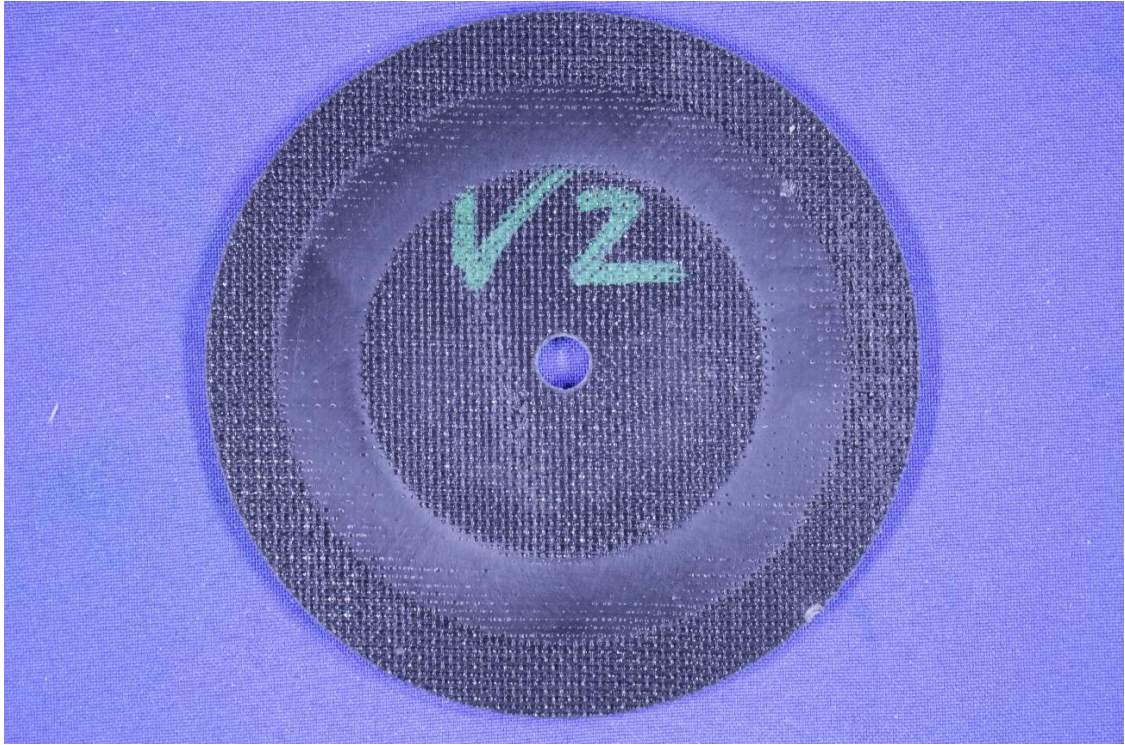


Figure 3: EXC18 - 074/1 - 40,000 Cycles

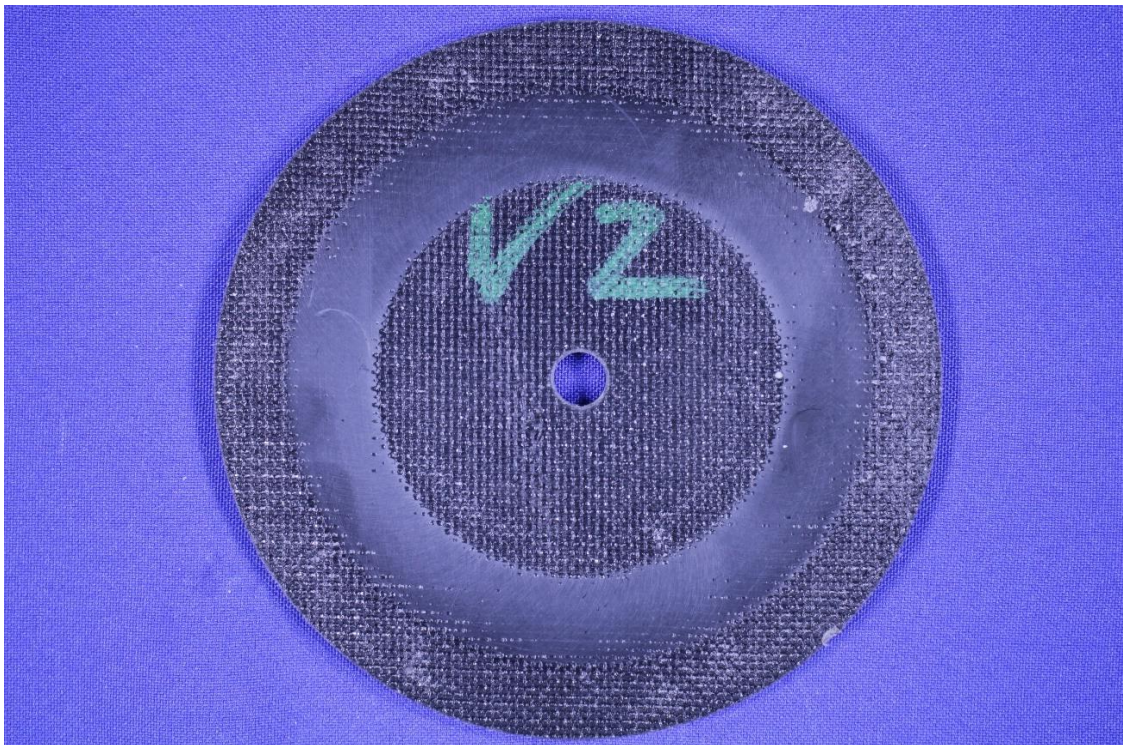


Figure 4: EXC18 - 074/1 - 60,000 Cycles

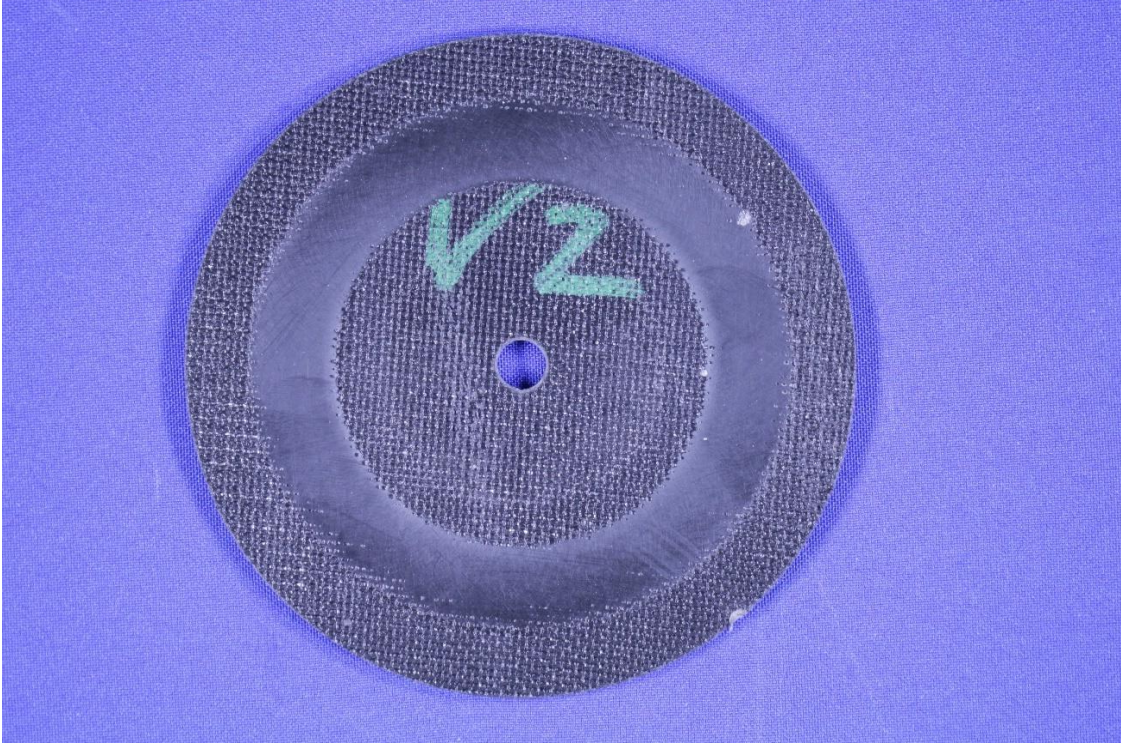


Figure 5: EXC18 - 074/1 - 80,000 Cycles



Figure 6: EXC18 - 074/2 - Before Testing



Figure 7: EXC18 - 074/2 - 8,000 Cycles



Figure 8: EXC18 - 074/3 - Before Testing

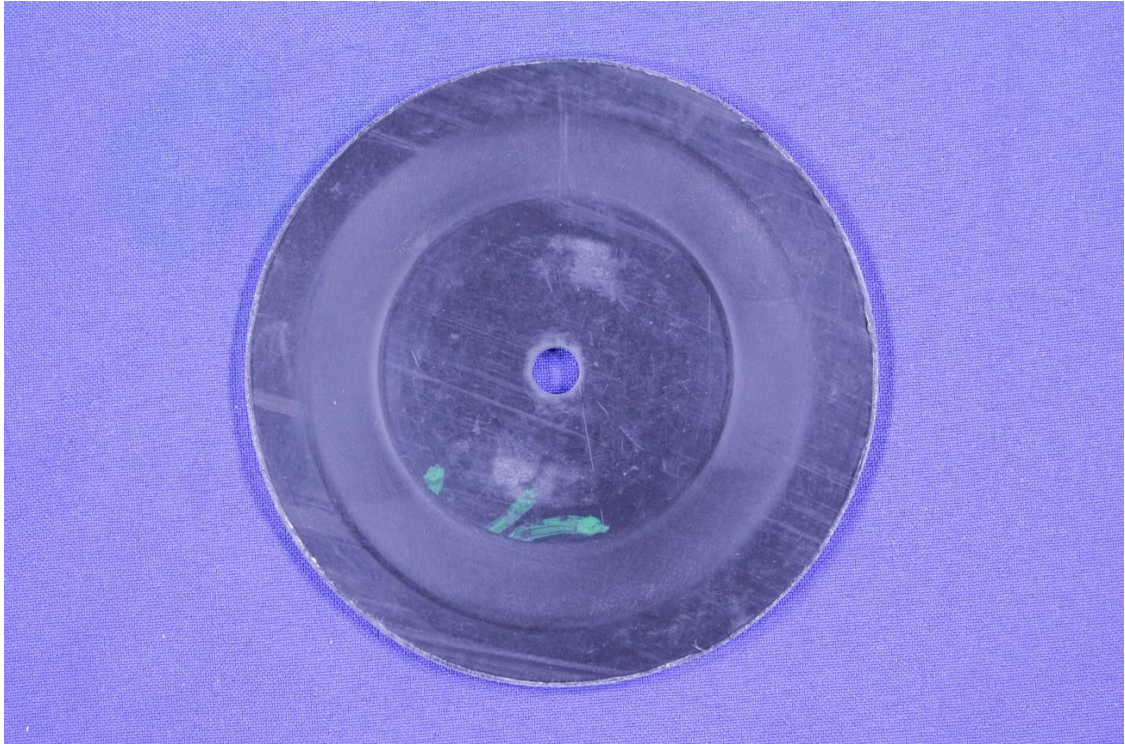


Figure 9: EXC18 - 074/3 - 20,000 Cycles

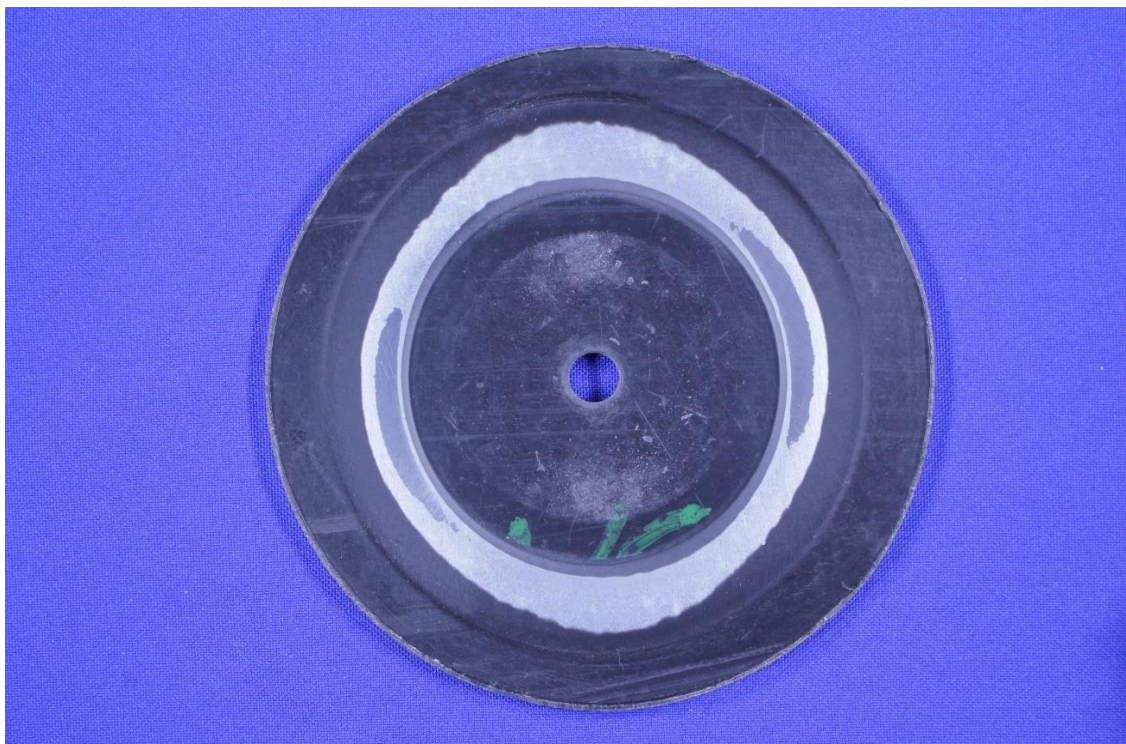


Figure 10: EXC18 - 074/3 - 40,000 Cycles

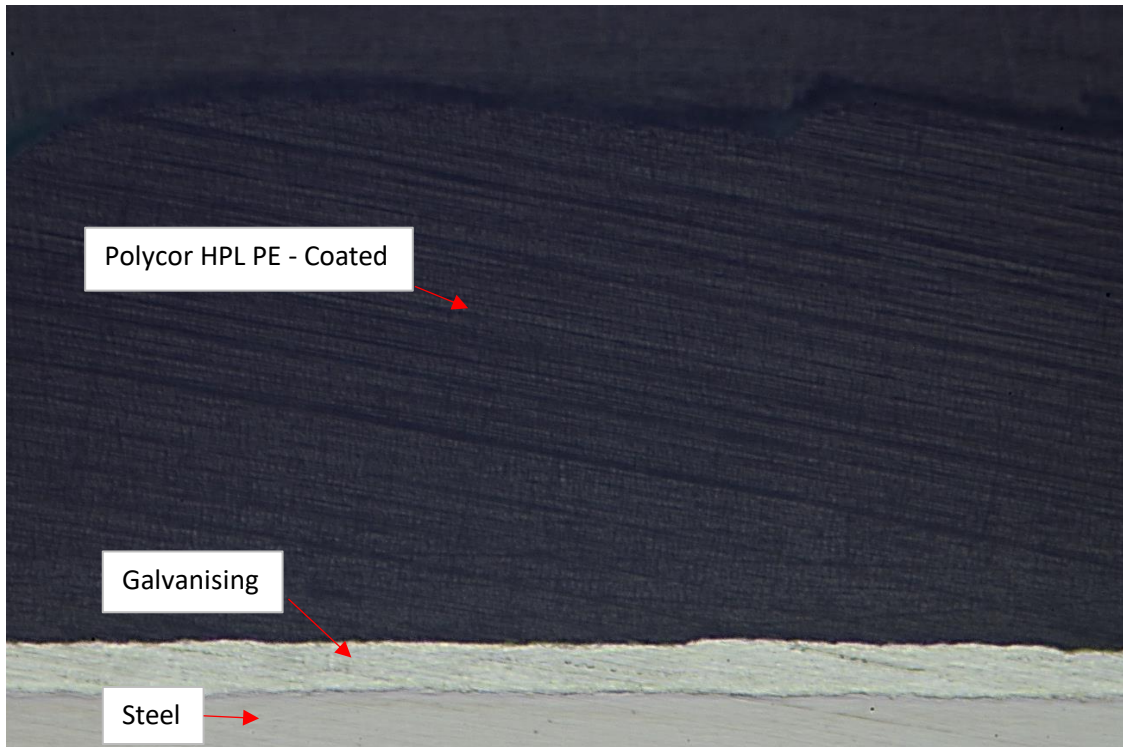


Figure 11: EXC18 - 074/1 Close Up of Original Coating  
Magnification: X100

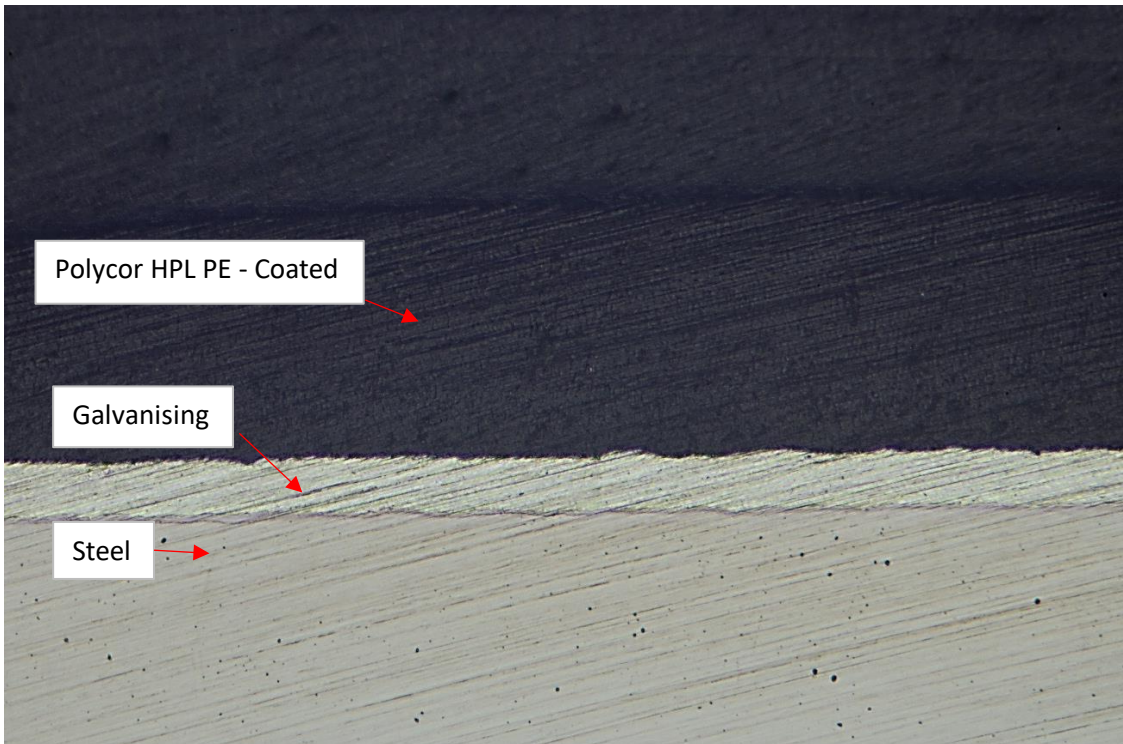


Figure 12: EXC18 - 074/1 Close Up of Wear Scar  
Magnification: X100

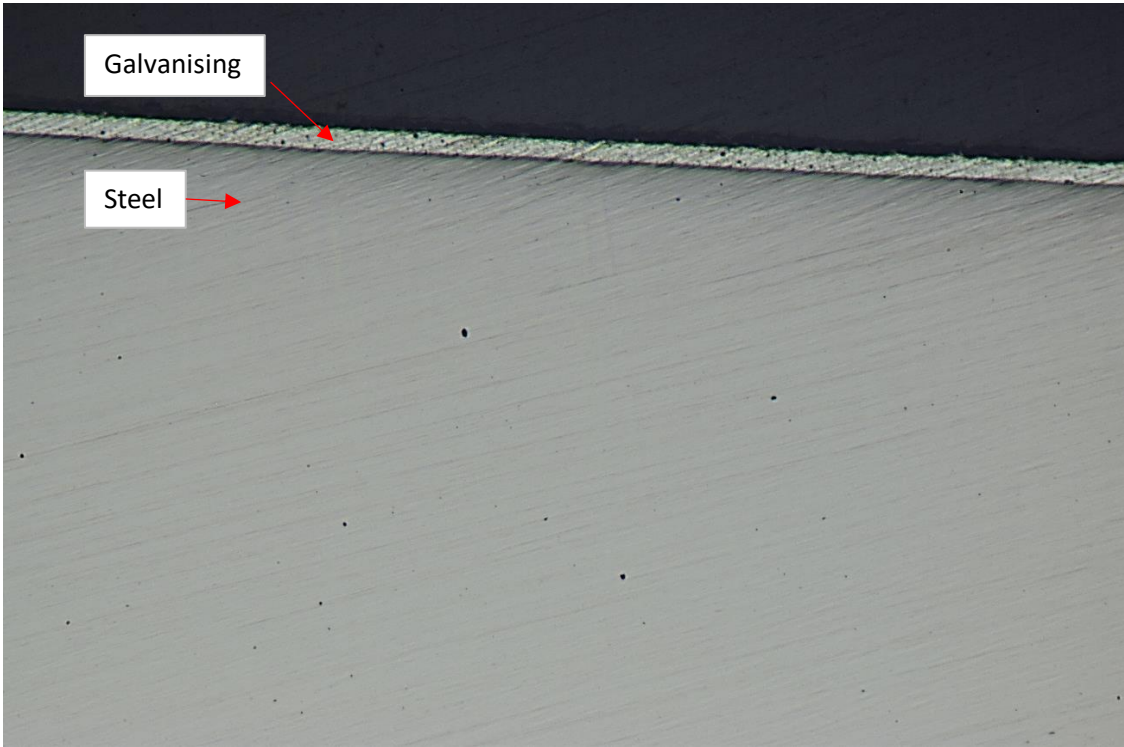


Figure 13: EXC18 - 074/2 Close Up of Original Coating  
Magnification: X100

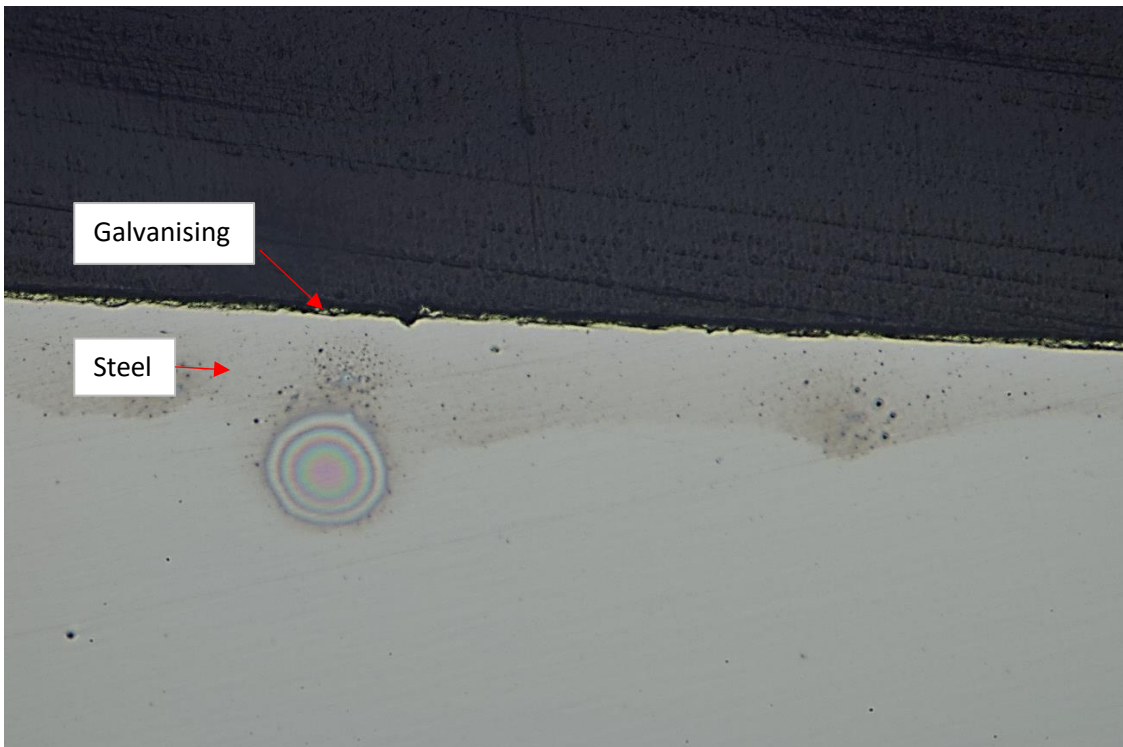


Figure 14: EXC18 - 074/2 Close Up of Wear Scar  
Magnification: X100

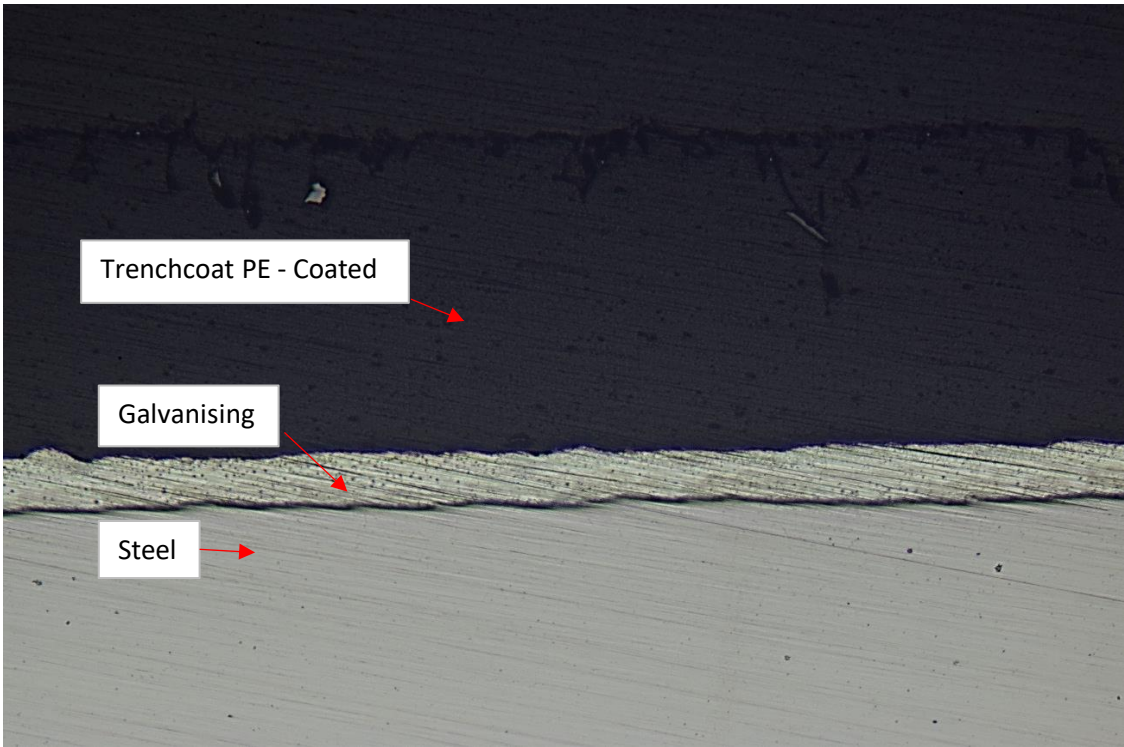


Figure 15: EXC18 - 074/3 Close Up of Original Coating  
Magnification: X100

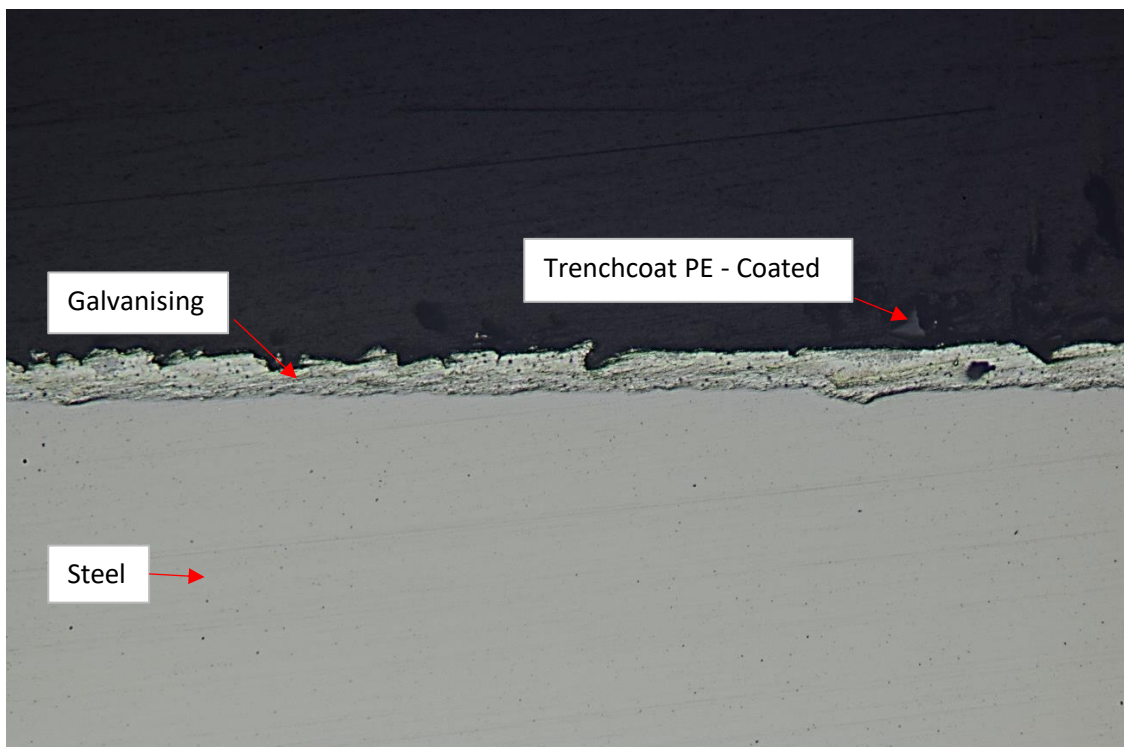


Figure 16: EXC18 - 074/3 Close Up of Wear Scar  
Magnification: X100