EROSIVE WEAR PROBLEMS IN PNEUMATIC CONVEYING OF FLYASH

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Factors Affecting Erosion

• Impact angle
• Particle impact velocity
• Surface hardness/ material properties
• Particle hardness
• Particle size distribution
• Solids loading ratio
Factors considered

• Bend geometry

• Conveying velocity

• Bend material
Variation of erosion with impact angle for various surface materials

Particle

Impact angle

Surface material

Impact Angle - ° - degrees

Erosion - in³ / ton - aluminium

Erosion - in³ / ton - glass

Al alloy

Glass

16

12

8

4

0

0 30 60 90

0 3 6 9

Variation of erosion with impact angle for various surface materials
The influence of bend geometry on the erosive wear of pipeline bends

For
90° Mild steel bends,
eroded by sand, at a solids
loading ratio of 2, with an
air velocity of 25 m/s
Influence of bend geometry on impact angle
Segmented bend
Bend with a replaceable back
Deflecting flows through a thick bend
Pipe section following bend
Specific Erosion – oz / ton

For mild steel bends
2 in bore
6 in radius in horizontal plane

Conveying 70 μm sand at a solids loading ratio of 2

Particle velocity - pipeline bends - specific erosion
Variation of erosion with velocity for various surface materials

Variation of erosion with velocity for various surface materials

Particle Velocity – m / s

Erosion – cm³ / kg

Glass

Al alloy

Reinforced nylon

Steel
The influence of air pressure and pipe bore on conveying air velocity for a free air flow of 40 m³ / min
Use of sacrificial inserts

Thin spiral insert
Variation of erosive wear resistance with indentation hardness for various surface materials
Comparison of erosive wear of rubber and steel – sand
Comparison of erosive wear of rubber and steel – coke