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11/8/2016

EXPT. NO.

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ABRASION IN METALS AND POLYMERS

• Aim of Experiment:

The dry abrasion tester is used to test the abrasive resistance of solid materials, metals, polymers, polymer composites, ceramics and other materials. The test is performed by loading a rectangular test sample against a rotating Neoprene rubber wheel with sand of controlled grit size at the contact area. The rubber wheel is rotated in the direction of flow of sand.

The mass of test sample is recorded before and after abrasion and the difference between the two values gives the wear in abrasion. Wear volume is normally plotted against load for different materials for comparison.

• Equipment: Dry Abrasion Tester, aluminium specimen, HDP (High Density Polyethylene), sand, Weighing Machine

• Observation: Next Page

• Conclusion: (1) HDP has greater abrasive resistance as compared to aluminium ~~at~~. Thus, wear volume of aluminium ~~at~~ is more than that of HDP for all sets of load applied.

• Observation

1) Material: Aluminium

Time Duration: 1 minute

Material Density: 2.7 gm/cc

Initial weight: 44.9436 gm

SL No.	LOAD (kg)	VOLUME OF WEAR (cc)	WEAR WEIGHT (gm)
1.	0.2	0.017	44.9436 - 44.8975 = 0.0461
2.	0.3	0.020	44.8975 - 44.8445 = 0.053
3.	0.4	0.022	44.8445 - 44.7845 = 0.060
4.	0.5	0.025	44.7845 - 44.7175 = 0.067

2) Material: HDP (High Density Polyethylene)

Time Duration: 1 minute

Material Density: 0.95 gm/cc

Initial weight: 17.3235 gm

SL No.	LOAD (kg)	VOLUME OF WEAR (cc)	WEAR WEIGHT (gm)
1.	0.1	0.0060	17.3235 - 17.3178 = 0.0057
2.	0.2	0.0066	17.3178 - 17.3115 = 0.0063
3.	0.3	0.0074	17.3115 - 17.3045 = 0.0070
4.	0.4	0.0080	17.3045 - 17.2969 = 0.0076

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2) As the load is increased from 200 gm to 500 gm (in case of Aluminium) and from 100 gm to 400 gm (in case of HDP), wear volume for both Aluminium and HDP increased.

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WEAR VOLUME VS LOAD for ALUMINIUM



