Where the dust load is heavy, a filter bank may be installed ahead of the precipitator. At the present time electrostatic equipment is comparatively expensive and bulky and is therefore only used when the expense is justified by the need for the cleanest air possible.

The advantage of the automatic impingement type filter consists in the small amount of attention which it requires. Such devices are therefore to be recommended where labor is scarce or where reliable and frequent attention to filters cannot be assumed. This type of equipment is not any better in dust arrestance than some unit filters, and it ranks next to precipitators in first cost.

Unit filters constitute the majority of air cleaners now in use, and some choice is possible between the types available. Where lint in an eminently dry state predominates, a dry filter obviously may be preferable to other types on account of its lint-holding capacity. If the lint is greasy or if

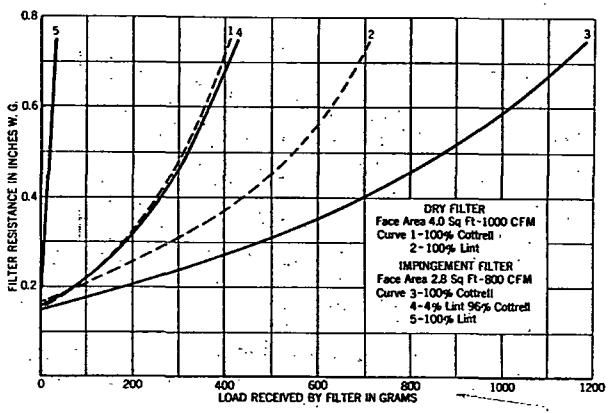


FIG. 3. DUST AND LINT HOLDING CAPACITY OF TWO FILTERS

oil vapor exists in the air, the dry filter may be troublesome, since grease tends to plug such filters and makes them difficult to clean, if they are of the cleanable type. The cleaning difficulty is avoided if a throw-away type of medium is used. Some dry filters are capable of high efficiencies, compared to other unit filters on fine particles, but their dust-holding capacity for such dust may be inferior to that of the viscous impingement type.

Viscous impingement unit filters represent the general type of air cleaner now in use. They have approached standards in size and their over-all dimensions are small when compared with their ratings.

Throw-away units are often installed in series so that the one in front, which usually becomes plugged with lint, can be discarded. The one located downstream is then moved to the front and is replaced by a new unit.

Viscous impingement unit filters do not have efficiencies as high as can be expected with some other types of unit filters, but their first cost and

upkeep are generally lower, whether of the cleanable or the throw-away type. The viscous impingement unit filter requires more careful attention than the automatic oil type if the resistance is to be maintained within reasonable limits.

Safety Requirements

An investigation of safety ordinances should be made by the engineer when the installation of an air cleaner of any considerable size is contemplated. It is possible that a combustible filtering media may not be permitted in accordance with some existing local regulations. Combustion of dust and lint on a filtering medium is possible, though the medium itself may not burn.

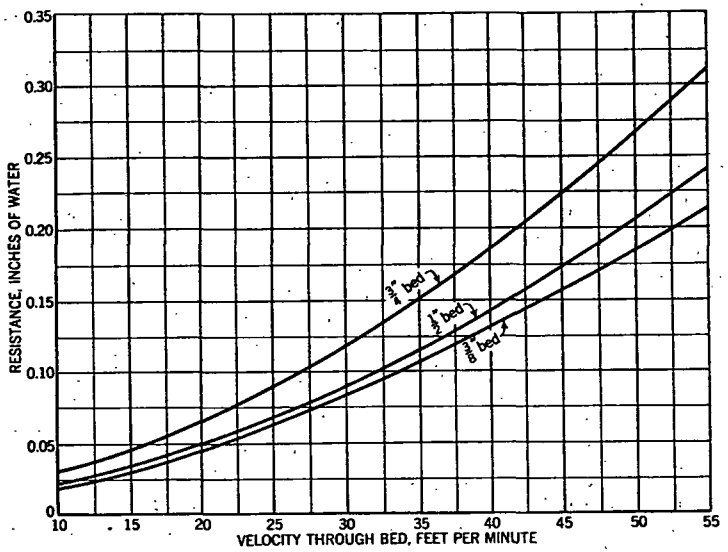


FIG. 4. RESISTANCE CURVES FOR 6-14 MESH ACTIVATED CARBON

ADSORPTION OF VAPORS

Activated carbon will adsorb organic vapors from air in connection with air conditioning. Cocoanut shell carbon employed for this purpose is a hard, granular, porous substance with the power of adsorbing vapors and minute droplets from air and under favorable conditions adsorbs some substances to the extent of 60 per cent of its own weight.

The air is circulated at a rate of 30 to 50 fpm through a granular carbon thickness of $\frac{3}{8}$ to $\frac{3}{4}$ in. The resistance of the carbon varies with the velocity as shown in Fig. 4.

Eventually, the carbon approaches saturation and must be reactivated or revivified by heating to drive out the adsorbed impurities. Reactivation consists essentially of applying heat continuously in increasing