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Characteristics:

Several **alkali containing hydrous aluminosilicates** are called mica. The most important ones are muscovite, sericite, **phlogopite and biotite** with different percentages of potassium, sodium, magnesium, iron and fluorine. They have in common the **tendency to produce elastic, flexible flakes**, as well as an **easy cracking - ability parallel to each layer**. The color is colorless, light green, red, brown or even black brown, depending on the percentage of iron.

Muscovite or white mica, known as Moscow Glas:

The formula: $KAl_2[(OH,F)_2Si_3O_{10}]$, hardness, according to Mohs, 2- 2.5, specific gravity 2.8, mother- of- pearl- shine, siler gloss, transparent in small flakes, colorless, yellowish. Line: white, broken: leaf shaped, complete cracking ability, flexible, elastic, heat- and acid resistant, extremely **weather resistant**. **Muscovite** is very common in the shape of irregular looking discs. Crystals are rare.

Deposits: Austria, USA, Norway, Russia, India, China, Australia.

Application:

Mica is used for many purposes: nitro lacquer, leather finish, as pearl gloss pigments in lustre pigment pastes and plastics, motor car enamel, lipsticks, eye shadows, bath foams, in the plexiglas industry, as a matting agent, paper coating, wallpapers, textile coatings, silk-screen printing ink, gravure ink, baking enamels, hammes finish, rigid- PVC, flexible- PVC, polystyrene, polycarbonate, polyamide, high- and low pressure polyethylene, casein, methyl-acrylate injection molding, ceramics- and glass industry and as insulation in the electro- technology.

Application for paints and varnishes:

Mica is mainly used for **anti-corrosive paint**, because it is **resistant against acids, alkalis and oxidizing media**. Furthermore, it strengthens the effect of inhibiting pigments, since the flakes are in layers, parallel to the film level. Therefore, they create an underlay with a high tensile strength and a high elasticity, which also improves the adhesion of the substrate. Moreover, mica is very suitable to alterate aluminum paints and for coatings with a high heat and chemical resistance.

Application for plastics:

The above mentioned characteristics are also a base for the use of mica as a filling and reinforcement in PVC. The reinforcement is due to the relation between the diameter and the thickness of the flakes.

It gives thermoplastics a high stiffness, good electrical properties and a good dimensional stability in heat.

Summary of the most important characteristics:

- flake structure as the most important property,
- improvement of the adhesion,
- reinforcement of systems,
- UV- resistance (especially clear lacquers),
- chemical- and temperature resistant,
- weather resistant.

Advised application fields:

- aluminium-, anti corrosive-, traffic paint,
- coating materials, powder coating,
- industrial varnishes,
- anti rust paints,
- ground coats,
- marine paint,
- thick coat systems,

- joint filler,
- molding compound,
- adhesives,
- thermoplastics.

Bibliography:

- Römpps Chemie-Lexikon
- H. Kittel; Lehrbuch der Lacke und Beschichtungen
- Geächter/Müller: Kunststoffadditive/3. Ausgabe

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