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STAIN REMOVAL

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3 Claims. (Cl. 87—5)

This invention relates to an improved stain removing process comprising treatment of the stained material with a chlorite, such as sodium chlorite or calcium chlorite, and oxalic acid in aqueous solution. The invention also includes an improved stain removing composition.

Chlorites are effective in removing stains and at the same time are free from tendencies toward destructive action with respect particularly to cotton and rayon textiles. The oxalic acid, similarly, is effective in removing stains, operating in a peculiarly effective manner in conjunction with the chlorites in this respect. Although the oxalic acid has reducing properties it is oxidized but slowly by the chlorites. The chlorite radical and the oxalate radical are the components of these reagents essential to the process of the invention. The term chlorite is used in this application in its strict chemical sense to define the salts of chlorous acid $HClO_2$.

In carrying out the process of the invention, the stained material is subjected to treatment with aqueous solutions containing a chlorite, or the chlorite radical, and oxalic acid. The stained material may be subjected to treatment with a single aqueous solution containing both the chlorite and the oxalic acid, or the stained material may be subjected successively to treatment with an aqueous solution containing the chlorite and a separate aqueous solution containing the oxalic acid. The aqueous solution containing oxalic acid may be an aqueous solution of oxalic acid or of an oxalate, such as sodium oxalate, and an acid or acid salt, such as acetic acid or, when used in conjunction with sodium chlorite for example, sodium acid sulfate, potassium acid phosphate or sodium silico fluoride. The aqueous solution containing a chlorite, when separate from the aqueous solution containing the oxalic acid, may be alkaline or neutral but with advantage is acid. Such acidity may be supplied by such acids or acid salts.

The treating solutions may contain, for example, from 10–25 grams per liter of sodium chlorite and from 10–25 grams per liter of oxalic acid.

The process and composition of the invention are of special value and application in the removal of iron stains from cotton and rayon textiles. In applying the process of the invention for this purpose, the textile may be subjected to treatment with an aqueous solution containing a chlorite, such as sodium chlorite or calcium chlorite, and also containing oxalic acid, or the textile may be subjected to treatment with an aqueous solution containing the chlorite and then to treatment with an aqueous solution containing the oxalic acid. In applying the latter alternative, the chlorite solution may contain, for example, about 16 grams per liter of sodium chlorite and the oxalic acid solution may contain, for example, about 6 grams per liter of oxalic acid.

The chlorites of the alkali-metals and the alkaline-earth-metals are useful in carrying out the invention. The several agents used in any one embodiment of the process are chosen with respect to each other to avoid undesired precipitation in the treating solution or solutions. For example, the use of a sulfate in conjunction with calcium chlorite is best avoided.

The stain removing composition of the invention comprises dry mixtures of these chlorites, oxalate salts, such as sodium oxalate, and acid agents, such as boric acid, sodium acid sulfate, potassium acid phosphate and sodium silico fluoride. These mixtures are stable, and, simply by solution in water, may be used to prepare any required quantity of stain removing solution, small or large. The composition may comprise, for example, one part (by weight) of sodium chlorite, one part of sodium oxalate and two parts of potassium dihydrogen phosphate.

I claim:

1. A stain removing process which comprises subjecting the stain to treatment with an aqueous solution comprising a chlorite from the group consisting of alkali-metal chlorites and alkaline-earth-metal chlorites, and a substance from the group consisting of oxalic acid and water-soluble oxalates.

2. A stain removing process which comprises subjecting the stain to treatment with an acid aqueous solution comprising a chlorite from the group consisting of alkali-metal-chlorites and alkaline-earth-metal chlorites, and a substance from the group consisting of oxalic acid and water-soluble oxalates.

3. A stain removing composition which comprises a dry mixture of a water-soluble chlorite from the group consisting of alkali-metal chlorites and alkaline-earth-metal chlorites, a water-soluble oxalate, and an acidifying agent.

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