

ABSTRACT

SULFURIZED OVERBASED COMPOSITIONS

This invention relates to a composition comprising at least one sulfurized overbased product made by contacting (A) at least one overbased product or (A') at least one boron-containing overbased product with (B) sulfur and/or at least one source of sulfur; said overbased product (A) or boron-containing overbased product (A') being made using at least one acidic material, with the proviso that when said acidic material is other than SO_2 or a source of SO_2 said overbased product (A) or boron-containing overbased product (A') is contacted with an effective amount of SO_2 or a source of SO_2 to displace at least part of said acidic material. In one embodiment the sulfurized overbased product is an overbased thiosulfate or a boron-containing overbased thiosulfate. In one embodiment, the sulfurized overbased product is made using the overbased product (A) and the composition further comprises at least one non-sulfurized boron-containing overbased product. The sulfurized overbased products are thermally stable and are useful as extreme pressure (EP) and/or anti-wear agents or antioxidants for use in lubricants, functional fluids and normally liquid fuels. The functional fluids can be oil-based, water-oil emulsions or water-based. The sulfurized overbased products are particularly suitable for use as EP and/or anti-wear agents for use in gear lubricants and cutting fluids. In one embodiment lubricating compositions are provided that pass both the L-37 High Torque Test and the L-42 High Speed Shock Test without the necessity of employing phosphorus and sulfurized olefin anti-wear systems in their formulation.