

Using XRF to Analyse Impure Gold and Silver (doré)

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The traditional and most accurate method of determining gold and silver in smelted or crudely refined bars is by Fire Assay, which is a gravimetric method. XRF can be used to facilitate the Fire Assay method by measuring Au, Ag, and other impurities to: 1) modify the Fire Assay process due high concentrations of iron and/or nickel, 2) to ensure the proper proof correction is used, and 3) to calculate the amount of extra silver that needs to be added in the inquartation step to isolate gold for a the final weighing step in Fire Assay. For some material, XRF is used to do the final determination of low concentrations of Au in silver doré and determine Pd and Pt in gold doré. The key to this is the in house production and certification of gold and silver reference materials.