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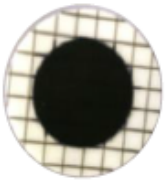
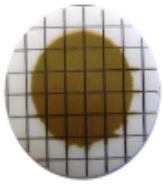
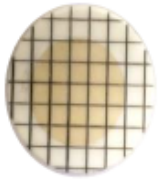
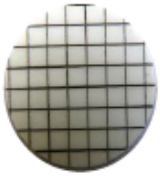
Patch Analysis

- Estimate the overall contaminants in mg. dirt / 100ml oil by viewing the discoloration with the naked eye and comparing with the charts. Remember, you are looking at the overall density of the contaminants, not just the actual colour. (See separate sheets.)
- Give an estimated ISO or NAS code by viewing under a microscope (Q) and compare with the supplied charts (B). For reference the grid lines on the patches are 100µ micron wide.
- You can also identify many different contaminants using the reference charts provided (B).

Example Patches

Gravimetric patch test examples using 0.8µ x 25mm diameter membrane patches. This involves drawing a quantity of oil through a 0.8µm membrane. This detects more contaminants than the ISO 4406 or NAS 1638 methods, including oil oxidation products which are responsible for varnish formation. This reference chart provides a simple comparison test for field checks of the condition of hydraulic fluids.

Conventional Hydraulics Patch Test Examples		**>10mg /100ml of oil contamination** An example of high contamination level that is critical to hydraulic equipment. **Warning Level- Extreme**
		**>4mg /100ml of oil contamination** An example of high contamination level that requires immediate cleaning or filtering. **Warning Level- Bad**
		**>2mg /100ml of oil contamination** An example of contamination level that could benefit from cleaning or filtering. **Warning Level- Marginal**
		**<1mg /100ml of oil contamination** An example of oil contamination level to which the oil has to be cleaned or filtered. **Warning Level- Good**
Servo Valve Controls		**>2mg /100ml of oil contamination** An example of high contamination level that requires immediate cleaning or filtering. **Warning Level- Bad**
		**0.5mg /100ml of oil contamination** An example of oil contamination level to which the oil has to be cleaned or filtered. **Warning Level- Good**

For reference, the grid lines in the membrane patches are approx. 100µ wide

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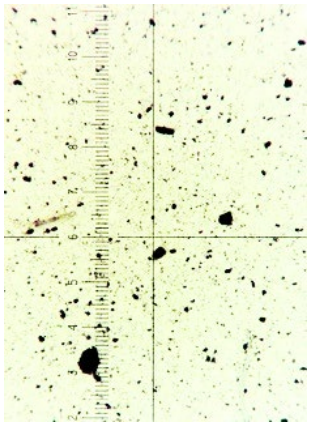
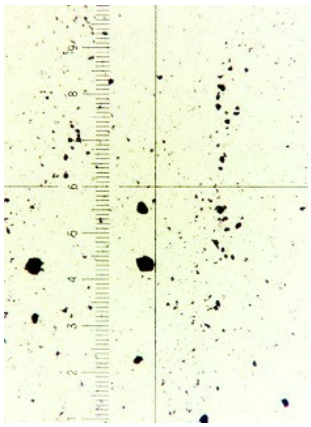
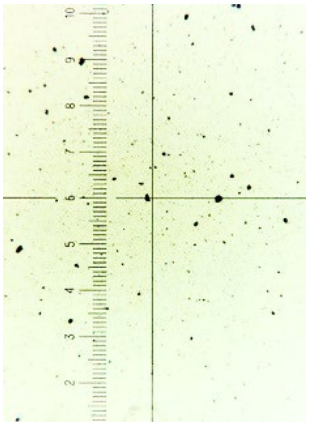
Reference Comparison Charts ISO / NAS Grades & Particle Identification guides. 100 x magnification.
These guides are used to estimate the ISO / NAS contamination grades of the oil samples.



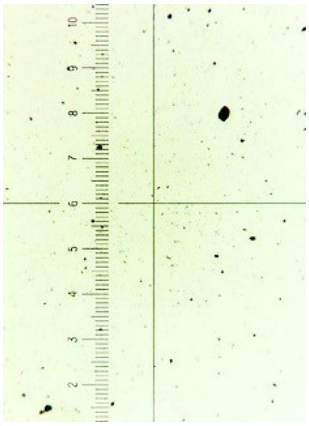
ISO 23/21/18 NAS 12



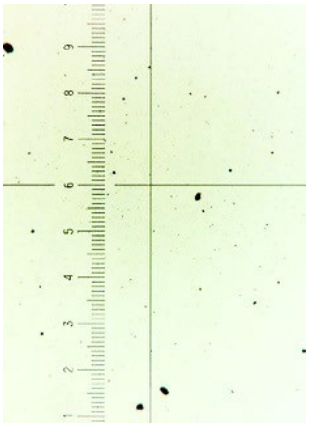
ISO 22/20/17 NAS 11



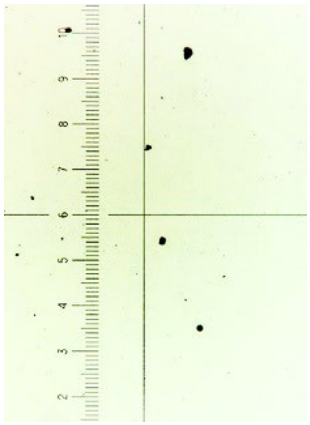
ISO 21/19/16 NAS 10



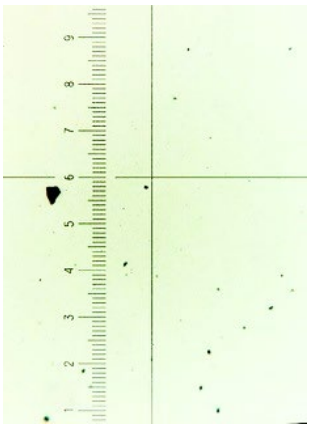
ISO 20/18/15 NAS 9



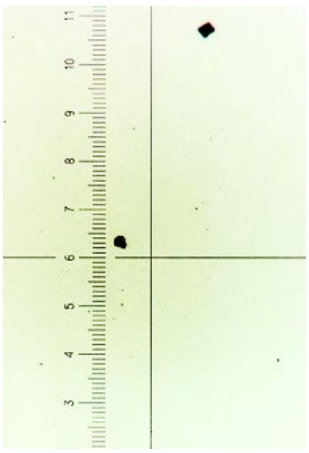
ISO 19/17/14 NAS 8



ISO 18/16/13 NAS 7



ISO 17/15/12 NAS 6



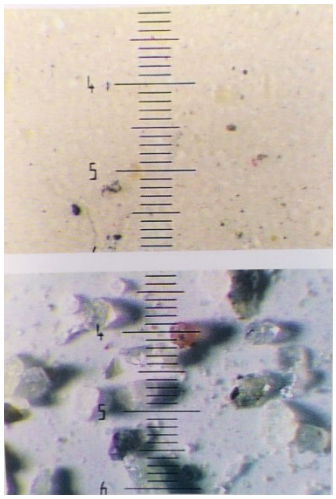
ISO 16/14/11 NAS 5

Gel residue

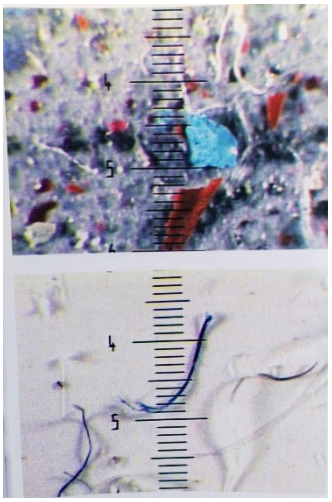
Coloured particles

Rust &white particles

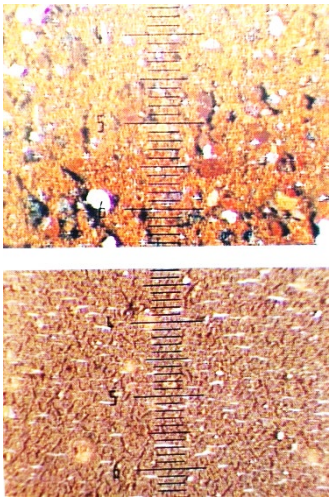
Metal Swarf



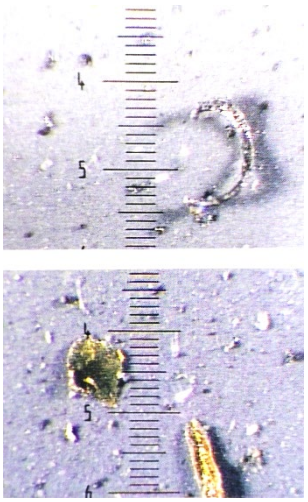
Silicates



Fibres



Oil ageing Products



Bronze, brass & copper