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DEPARTMENT OF MINES AND RESOURCES

BUREAU OF MINES

CANADA

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Ottawa, May 17, 1946.

R E P O R T

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 2052.

A Comparison of the Properties
of Two Core Oils.

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(Copy No. 4.)

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Origin of Request:

On March 19, 1946, a letter was received from the Canadian Foundry Supplies and Equipment Limited, 4295 Richelieu Street, Montreal 30, Quebec, requesting that two core oils which were being submitted, labelled "A" and "B", be tested to determine their foundry suitability.

Preparation for Testing:

Standard mixtures were prepared and specimens for tensile strength and hot strength were rammed up.

(Preparation for Testing, cont'd) -

The standard mixtures were made up as follows:

2,000 grams Standard A.F.A. testing sand,
20 grams Casco,
20 grams core oil, and
60 grams water.

Baked Tensile Strength:

Figure 1 shows the results of baking for various periods of time at temperatures of 400° F. and 450° F. Oil "B" develops about 30 per cent more baked strength than Oil "A".

Both oils would give satisfactory results in the foundry. When baked at 400° F., the baking time of either oil can vary from 2 to 4 hours without greatly affecting the strength of the cores.

Core Gas:

When used in equal amounts, Oil "B" generates 3 to 6 per cent more gas than Oil "A". However, when mixtures are made so as to obtain equal baked strengths, the sand containing Oil "A" would generate more gas because more of Oil "A" would have to be added. See Figure 2.

Collapsibility and Hot Strength:

Mixtures containing Oil "A" had the same collapsibility and hot strength properties as mixtures made containing Oil "B". See Figure 3.

Analysis of Oils:

Table I gives the analyses of Oils "A" and "B", respectively, as determined by the Testing Laboratories of the Department of Public Works, Ottawa:

(Continued on next page)

(Analysis of Oils, cont'd) -

TABLE I:

<u>Tests</u>	<u>Sample "A"</u> <u>M160/46</u>	<u>Sample "B"</u> <u>M131/46</u>
1. Refractive Index (at 20° C).....	1.495	1.505
2. Specific Gravity.....	0.9491	0.9452
3. Iodine No. (Wijs).....	151.6	193
4. Saponification No.....	148	110
5. Acid No.....	30.4	0.14
6. Flash Point, °F (Open Cup).....	270	345
7. Fire Point, °F.....	310	350
8. Rosin (Qualitative Test).....	Present	Present
9. Viscosity at 100°F (S.U.).....	211.5	169.5
10. Viscosity at 210°F (S.U.).....	52.3	48.4
11. Diene No. (Kaufmann).....	3	9

Comments:

1. Oil "B" is about 30 per cent stronger than Oil "A". Collapsibility, hot strength, and gas evolved are about the same for both oils.

2. Oil "A" contains one or more ingredients with lower iodine numbers than Oil "B".

3. Oil "A" contains one or more ingredients with higher saponification numbers than Oil "B".

4. Oil "A" contains one or more ingredients with higher acid numbers than Oil "B".

5. Oil "A" contains one or more ingredients with lower flash points than Oil "B".

6. Oil "A" has a higher viscosity than Oil "B".

7. Oil "A" contains one or more ingredients with a lower Diene number than Oil "B".

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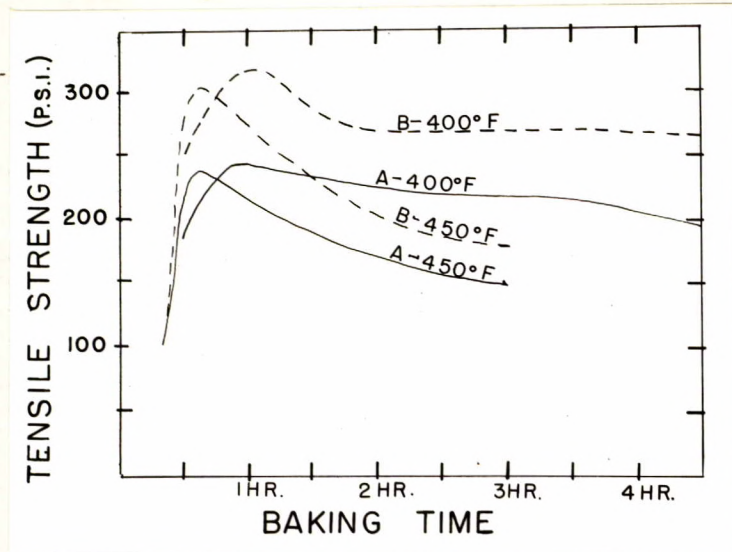
(Figures 1, 2 and 3)
(follow, on Page 4.)

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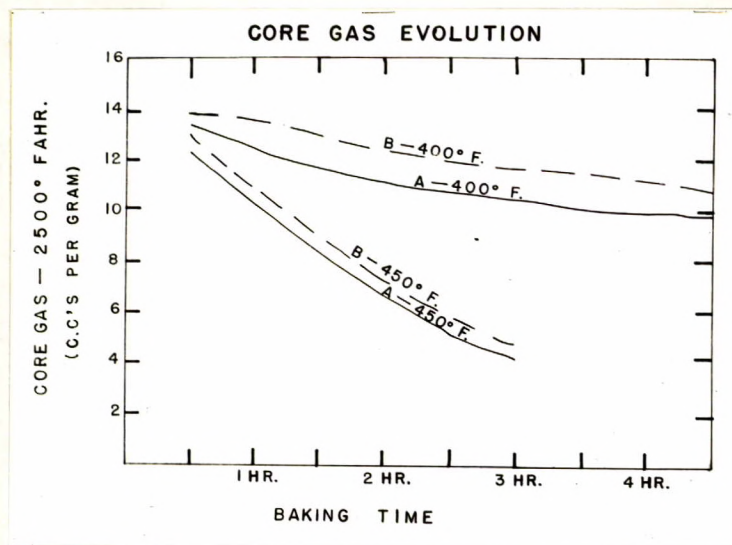
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Figure 1.



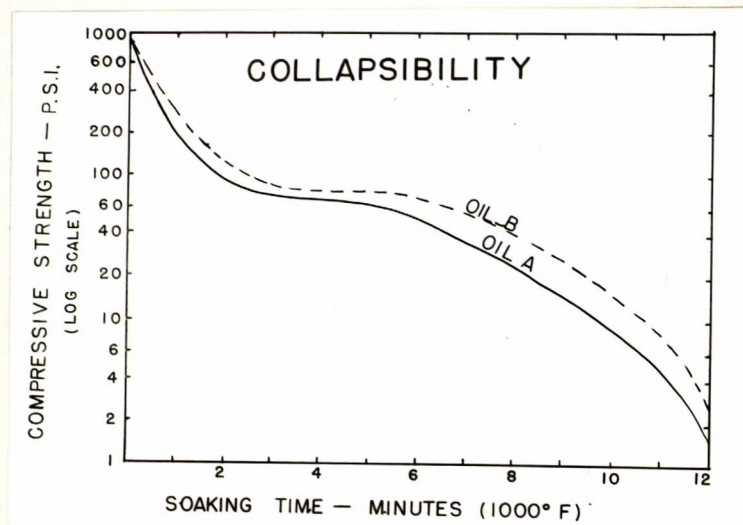
BAKED TENSILE STRENGTH.

Figure 2.



GAS EVOLVED.

Figure 3.



COLLAPSIBILITY.

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