Final Conference - Malta

Shoreline response

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19.11.25

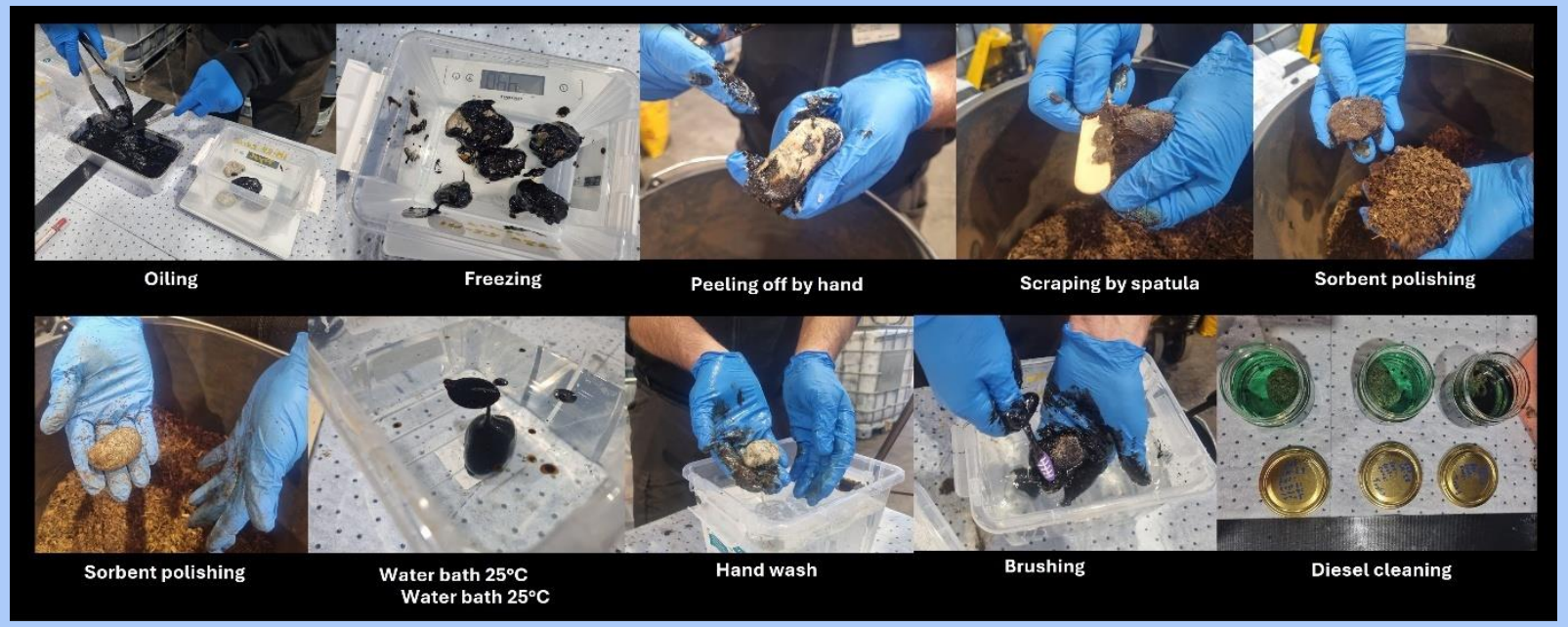
KYSTVERKET

Task 5.6 Tests on practical cleaning techniques

- Small-scale test 1 and 2 – frozen surroundings
- Small-scale test 3 – water Baths
- Small-scale test 4 – concrete mixer
- Container test
- Small scale test 5 - Cleaning after long time weathering

Frozen surroundings (Small-scale test 1 and 2)
Water Bath (Small-scale test 3)

- Test with frozen rocks conducted to see if this would limit the degree of adhesion
- Water bath to determine temperature thresholds for the upcoming tests
- Results will not be presented here.

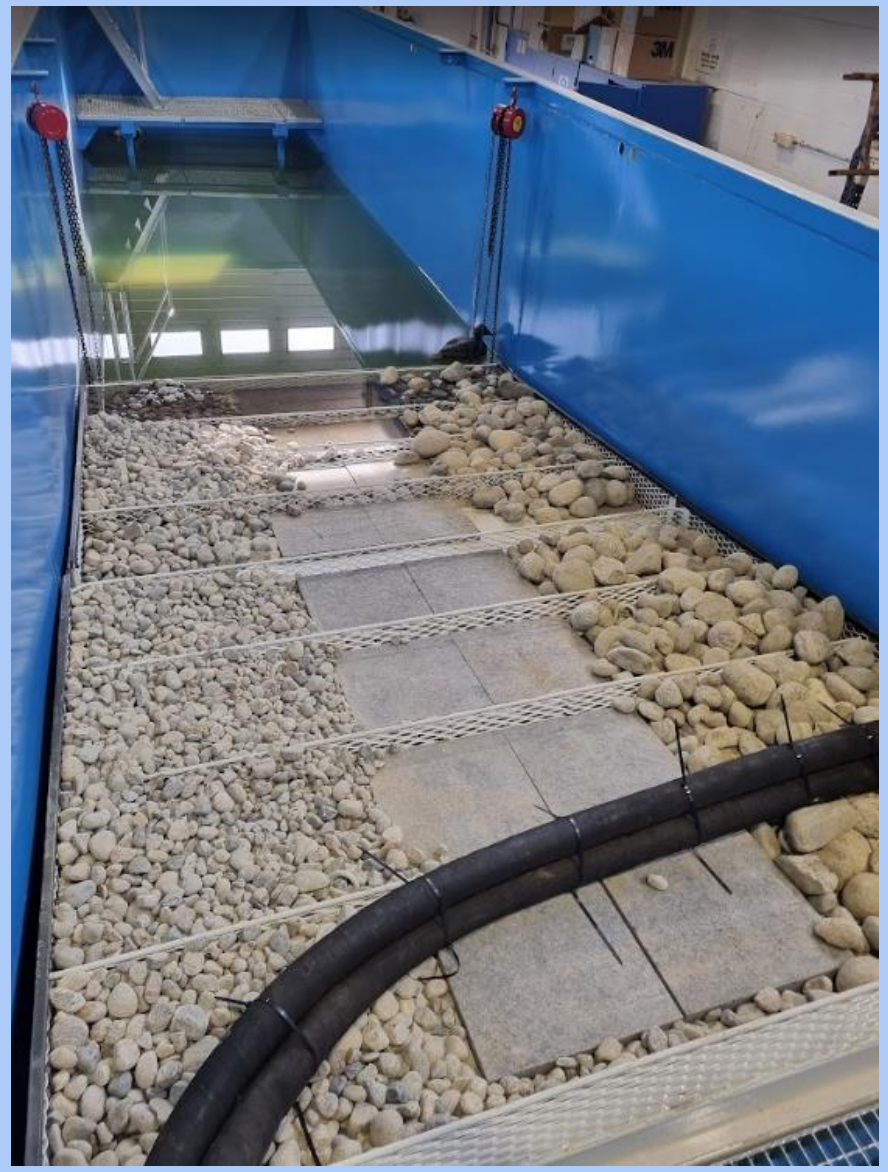


Small-scale test 4 – Concrete mixer

Concrete mixer > findings

- IM-27 and IM-29: Effective cleaning observed at 12.5°C.
- IM-28: Effective at 25°C, some effect at 20°C.
- IM-28 with shoreline cleaning agent: Effective at 10.5°C.

Beach cleaning container test

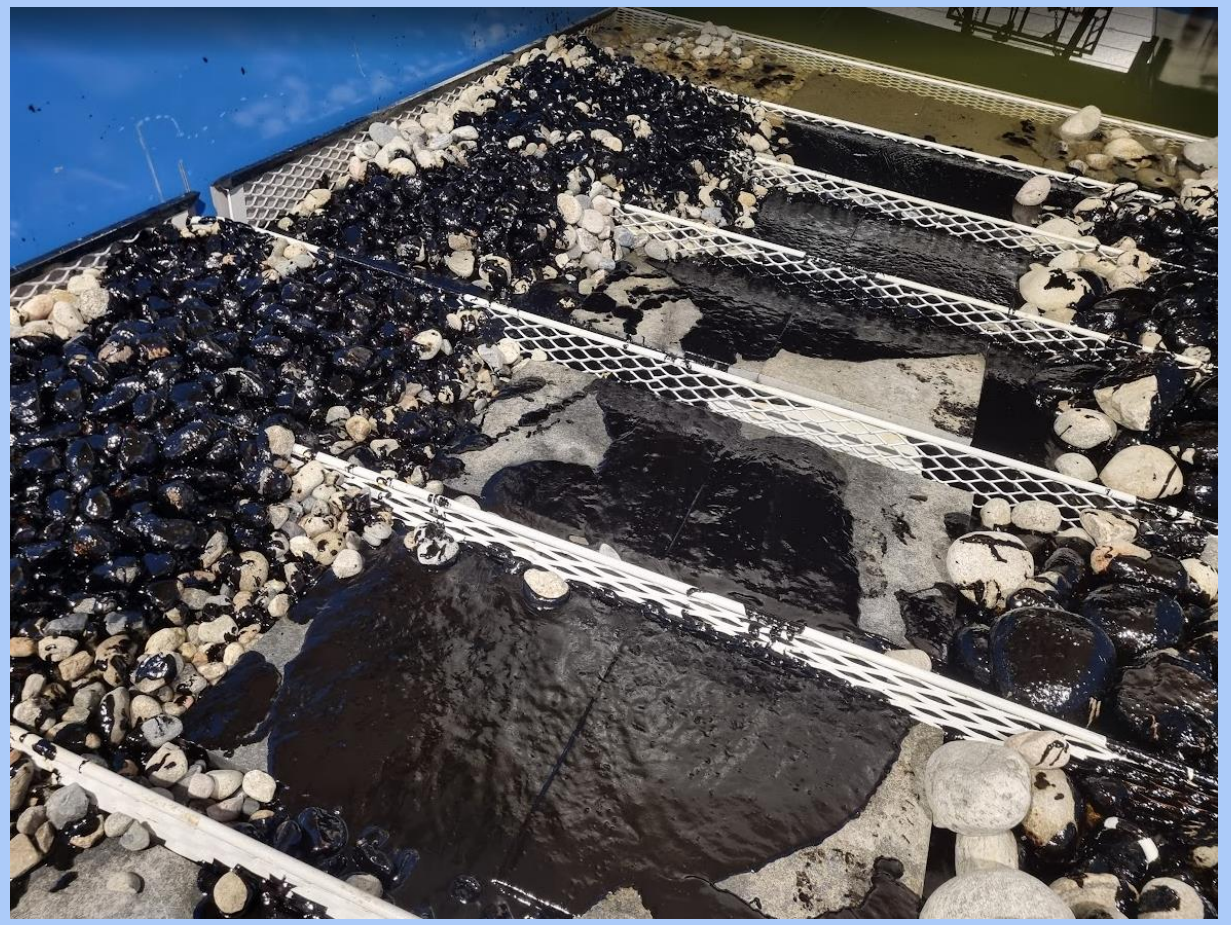


Beach cleaning container

- Step 1: 30 mins flooding
- Step 2: high pressure washing

If no or little effect:

- Step 3: Polishing with sorbents
- Step 4: Shoreline cleaning agent



Beach cleaning container

Flooding

Pressure washing

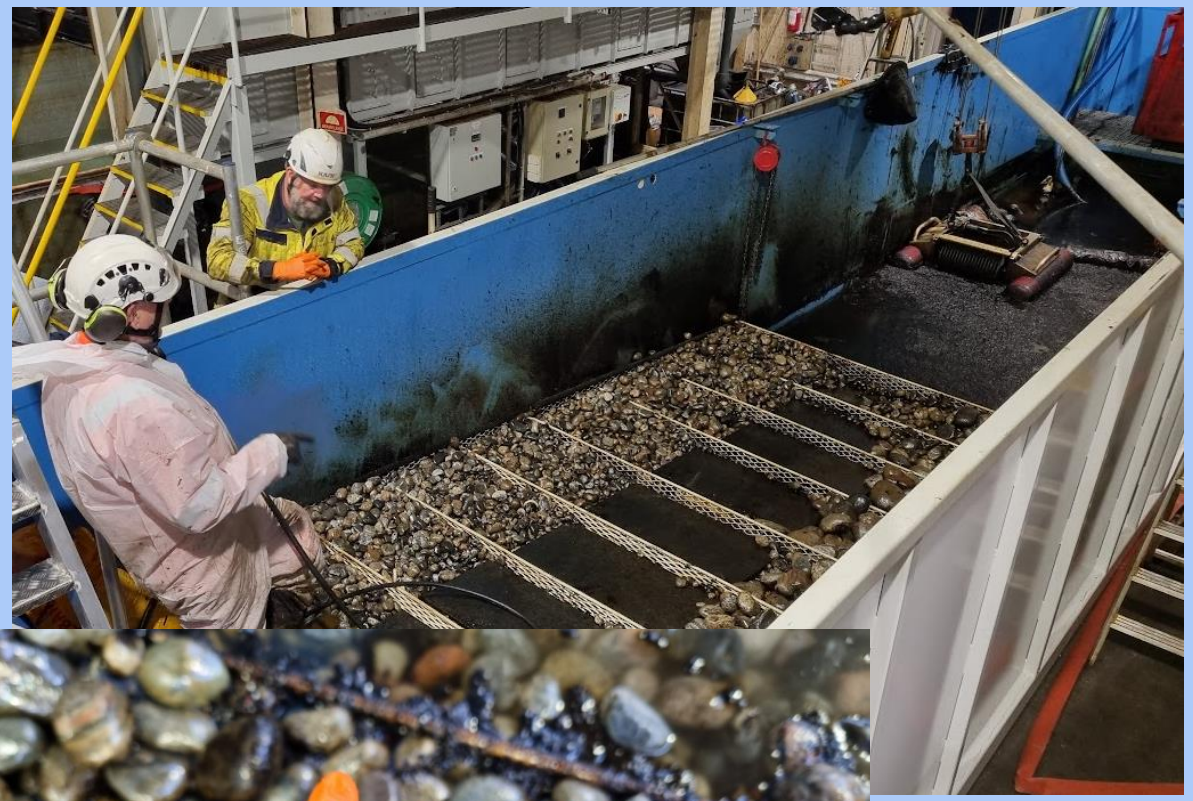
Beach cleaning container

Sorbent polishing

Adding shoreline cleaning agent

Beach cleaning container - findings

- **IM-27** comparable to trad IFOs
  - Flushing 20–22°C
- **IM-28** most challenging
  - Flushing 30-40°C?
  - Re-attaches quickly
  - Closed off cleaning station?
  - Manual polishing with sorbents
- **IM-29** easiest to clean
  - Flushing 12–15°C



Small scale test 5 - Long time weathering

- How does oils respond to cleaning after weathering outdoors on shore?
- Does the oil dry out, making it easier to remove?
- Does the oil adhere more strongly, making it harder to clean?
- Does solar heating cause it to migrate further into the sediment layers?

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11.June 2025

11.August 2025

23.October 2025

Small scale test 5
Long time weathering

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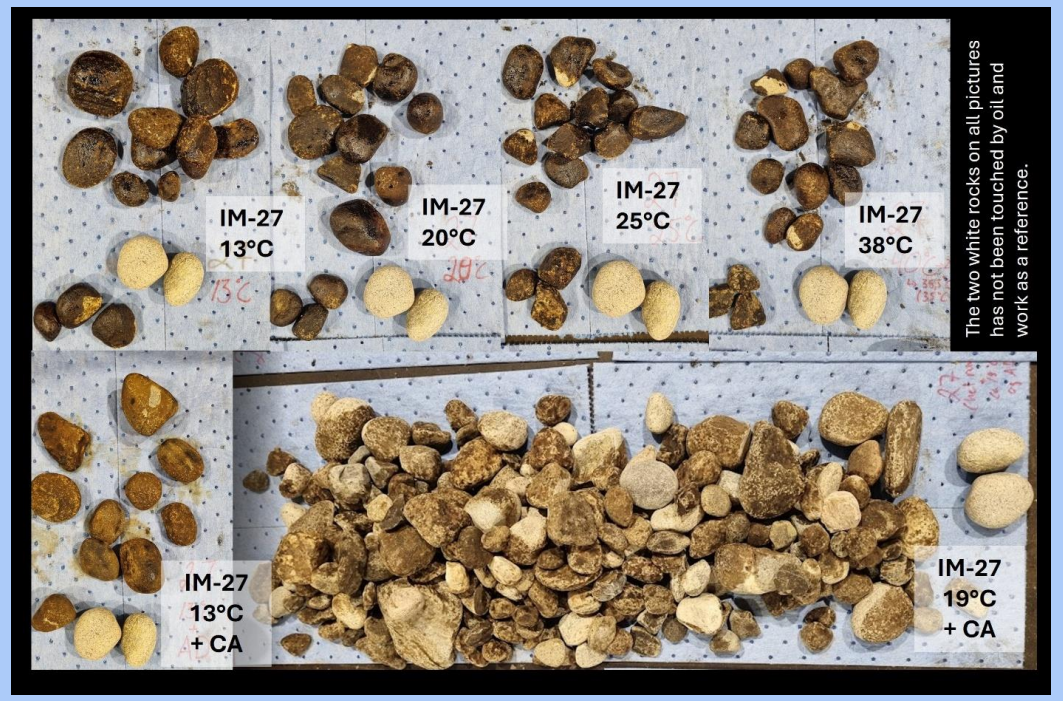
Weathering – test proceedure

- 11.june – 23 October > 4 months 12 days
- Procedure:
  - Concrete mixer 2min - 13°C water temp
  - Concrete mixer 2min - 20°C water temp
  - Concrete mixer 2min - 25°C water temp
  - Concrete mixer 2min - 40°C water temp
  - Shoreline cleaning agent - Concrete mixer 2min - 13°C water temp
  - Shoreline cleaning agent - Concrete mixer 2min - 20°C water temp

Long time weathering – findings IM-27



IM-27:

Not 100% clean - also with shoreline cleaning agent

Acceptable result > Shoreline CA + 20°C water temp

But…. Depending on sensitivity > only surf washing might be enough…..

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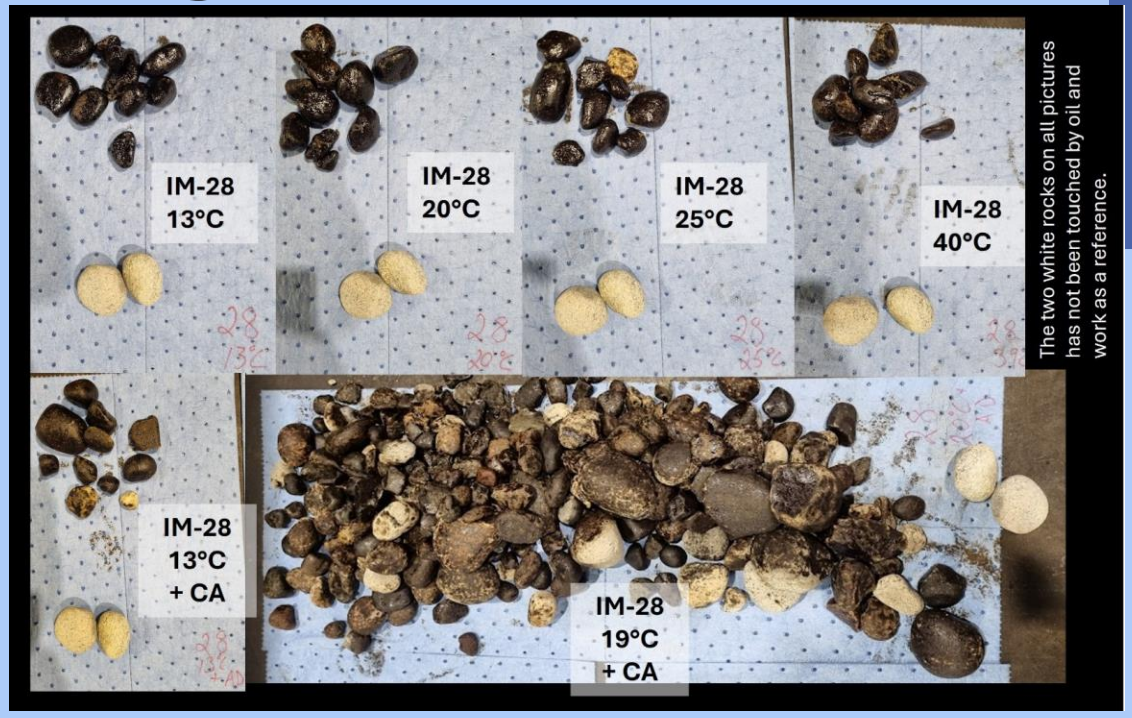
Long time weathering – findings IM-28



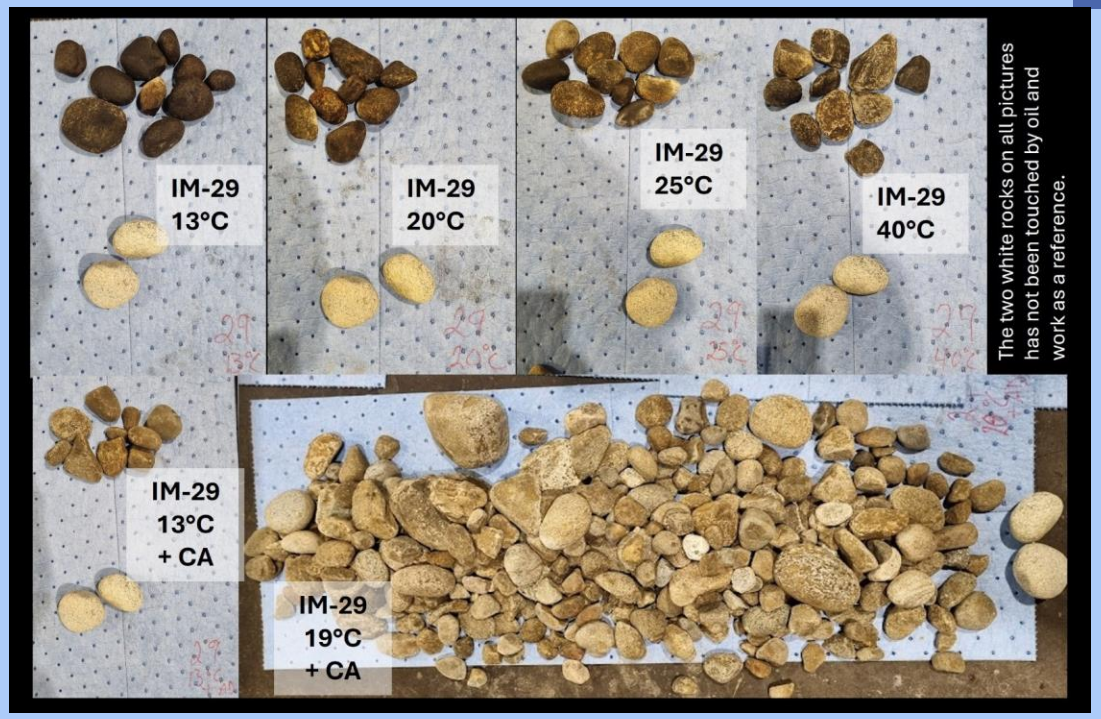
IM-28:

Not 100% clean - also with shoreline cleaning agent

Shoreline CA + 20°C water temp not acceptable result unless surf washing afterwards.

Shoreline CA + 40/50°C water temp might be good enough

Long time weathering – findings IM-29



IM-29:

Not 100% clean - also with shoreline cleaning agent

Acceptable result > Shoreline CA + 20°C water temp

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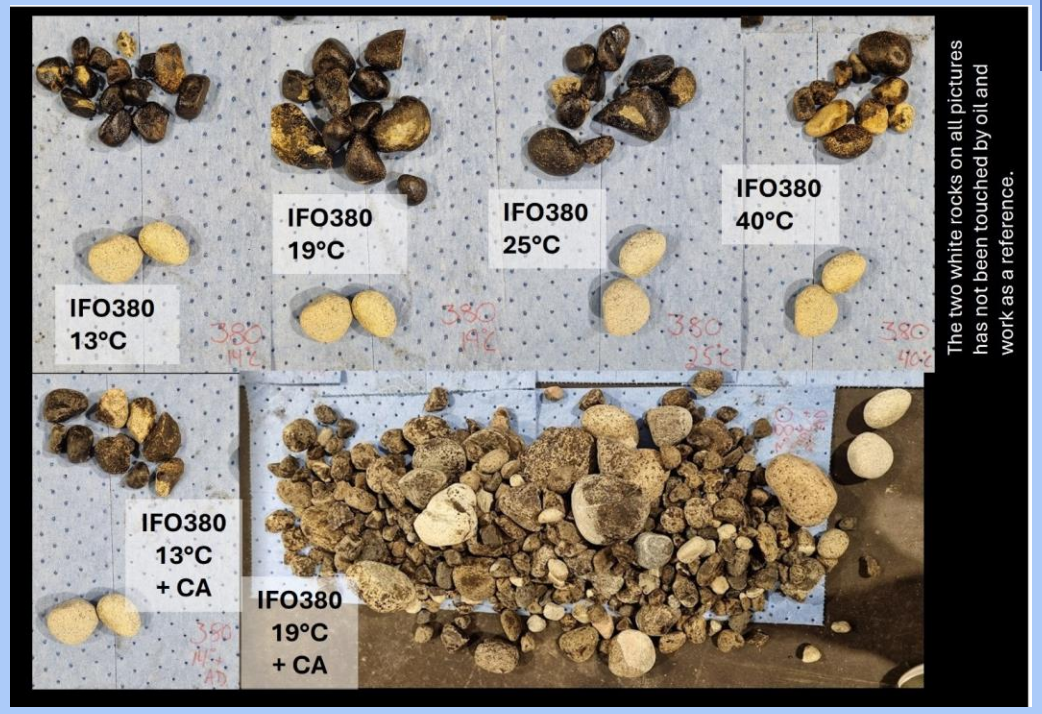
But…. Depending on sensitivity > 13°C pressure washing or only surf washing might be enough…..

Long time weathering – findings IFO380



IFO380:

Not 100% clean - also with shoreline cleaning agent

Acceptable result > Shoreline CA + 20°C water temp

But…. Depending on sensitivity > only surf washing might be enough…..

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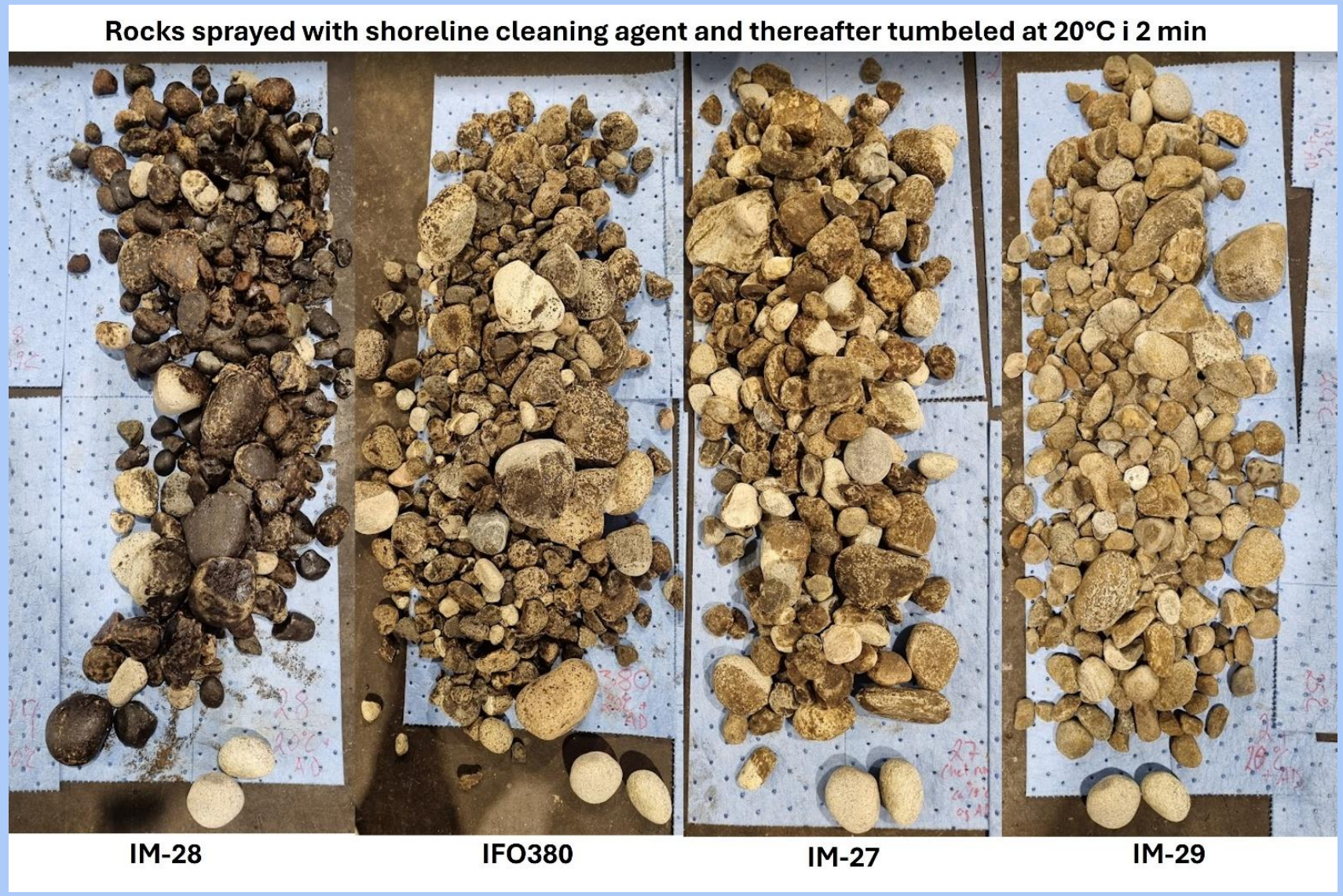
Long time weathering - findings

Comparison:

IM-28 most challenging (higher temp needed)

IM-27 and **IFO380** mid result > comparable

IM-29 Best result



Example of a field based “closed off” cleaning station.

“What do you have in stock?”

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Overall conclusion

Variability in behaviour among LSFOs

- There is no clear-cut answer.

In a future oil spill:

- Conduct systematic initial method testing before operations are fully initiated.

Thank you for your attention