

<b>Method:</b> <b>ACRN-20</b> Revision:        5    Final Revision Date: 03/26/03	<b>Acrylonitrile  Specification Tests</b>	<b>INEOS Nitriles</b>
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## METHOD SUMMARY

A refractive index of acrylonitrile is measured directly with a refractometer between 23 and 27°C by the critical angle method using monochromatic light from a sodium lamp. The value reported is corrected to 25°C.

## SAFETY

Acrylonitrile is hazardous to the health and dangerous to handle. Use acrylonitrile in a well ventilated hood. Review the MSDS for detailed information concerning toxicity, first aid procedures and safety precautions.

Refer to the appropriate safety section or site manual for the necessary protective equipment to use when handling any reagents or samples.

## REFERENCES

STM C8-75 (SOHIO Test Method), "Refractive Index of Acrylonitrile"

ASTM D1218-02 "Standard Test Method for Refractive Index and Refractive Dispersion of Hydrocarbon Liquids"<http://www.astm.org/>

## INTERFERENCES

There are no known interferences to this method.

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October 2006

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## APPARATUS AND REAGENTS

1. **Refractometer**, Bausch & Lomb Model ABBE-3L, Band L, Abbe-Model 10450 or equivalent.
2. **Refrigerated constant temperature bath**, Fischer Model 90, Precision Temperature, Trol or equivalent.
3. **Disposable Dropper.**
4. **Thermometer**, range of -5 to 30°C, sensitive to ±0.1°C.
5. **Refractometer Calibration Fluid**, NIST traceable, Nd = 1.39, National Microscope Exchange, <http://www.microscopeexchange.com>, 1-800-851-7635.

## CALIBRATION

The thermometer used in this method should be calibrated against a certified reference thermometer. The refractometer should be calibrated with a reference solution within the range of Nd 1.38 to 1.40.

## PROCEDURE

1. Adjust the temperature to between 23.0 and 27.0°C.
2. Using a dropper, introduce some sample into the liquid channels leading to the prism.
3. Allow 30 seconds for the sample to come to temperature and take a reading.
4. Read the temperature of the prism.

## CALCULATIONS

When the temperature is between 23°C and 27°C, the reading must be corrected to 25°C. The calculation is:

$$\text{Corrected reading} = \text{actual reading} + [(\text{Actual Temperature} - 25) \times 0.000539]$$

or use the following table:

$$\text{R.I.} + \text{TEMP CORRECTION} = \text{CORRECTED R.I.}$$

$$23.0 = - 0.0011 \quad 24.0 = - 0.0005 \quad 25.0 = 0.0000 \quad 26.0 = + 0.0005$$

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23.1 = - 0.0010	24.1 = - 0.0005	25.1 = +0.0001	26.1 = + 0.0006
23.2 = - 0.0010	24.2 = - 0.0004	25.2 = +0.0001	26.2 = + 0.0006
23.3 = - 0.0009	24.3 = - 0.0004	25.3 = +0.0002	26.3 = + 0.0007
23.4 = - 0.0009	24.4 = - 0.0003	25.4 = +0.0002	26.4 = + 0.0008
23.5 = - 0.0008	24.5 = - 0.0003	25.5 = +0.0003	26.5 = + 0.0008
23.6 = - 0.0008	24.6 = - 0.0002	25.6 = +0.0003	26.6 = + 0.0009
23.7 = - 0.0007	24.7 = - 0.0002	25.7 = +0.0004	26.7 = + 0.0009
23.8 = - 0.0006	24.8 = - 0.0001	25.8 = +0.0004	26.8 = + 0.0010
23.9 = - 0.0006	24.9 = - 0.0001	25.9 = +0.0005	26.9 = + 0.0010

## REPORT

Report the Refractive Index to 4 decimal places.

Refractive Index, Nd = 1.3885