Numeric property search (NPS) on STN®

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STN User Meeting Barcelona – November 7th, 2013
Agenda

- Significance of numeric values in patents
- Numeric data identification and normalization
- Numeric property searching
  - Specific property searches
  - Percent searches
  - General searches for records containing properties

A list of STN databases with the NPS feature:
http://www.stn-international.com/nps_databases.html
Significance of numeric values in patents

- Numeric values play a key role in patents which use chemical and physical properties to set the scope of patent protection
  - important prior art in different technical areas, e.g. pharma, biotech, chemical, and engineering
  - exact values are typically expressed in broad ranges

- Searching numeric data in patents is challenging
  - standard text searching tools are too limited
  - great variety of properties and units and a great variation of representation
Seventeen STN databases now offer the Numeric Property Search (NPS) feature!

<table>
<thead>
<tr>
<th>Database</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1MOBILITY</td>
<td>Global Mobility Bibliographic database</td>
</tr>
<tr>
<td>2MOBILITY</td>
<td>Global Mobility Standards database</td>
</tr>
<tr>
<td>AEROSPACE</td>
<td>The Aerospace and High Technology database</td>
</tr>
<tr>
<td>AGRICOLA</td>
<td>Food, agriculture and related fields database</td>
</tr>
<tr>
<td>AUPATFULL</td>
<td>Australian patent applications and specifications</td>
</tr>
<tr>
<td>CABA</td>
<td>CAB Abstracts file</td>
</tr>
<tr>
<td>CANPATFULL</td>
<td>Canadian patent applications and specifications</td>
</tr>
<tr>
<td>CNFULL</td>
<td>Chinese Applications, Patents, and Utility Models</td>
</tr>
<tr>
<td>COMPENDEX</td>
<td>Computerized Engineering Index and EI Engineering Meetings</td>
</tr>
<tr>
<td>ENCOMMPAT / ENCOMMPAT2</td>
<td>API EnCompass Patent Database</td>
</tr>
<tr>
<td>FSTA</td>
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<td>INFULL</td>
<td>Indian Patent Applications and Granted Patents</td>
</tr>
<tr>
<td>JPFULL</td>
<td>Japanese Applications, Patents, and Utility Models</td>
</tr>
<tr>
<td>METADEX</td>
<td>Metals Abstracts/Alloy Index</td>
</tr>
<tr>
<td>PCTFULL</td>
<td>Patent Cooperation Treaty database</td>
</tr>
<tr>
<td>PQSCITECH</td>
<td>ProQuest Science and Technology</td>
</tr>
<tr>
<td>TULSA / TULSA2</td>
<td>Petroleum Abstracts (Subscribers/Non-subscribers)</td>
</tr>
<tr>
<td>WVPIDS</td>
<td>Derwent World Patents Index Subscriber File</td>
</tr>
<tr>
<td>WPINDEX</td>
<td>Derwent World Patents Index Subscriber Index</td>
</tr>
<tr>
<td>WPIX</td>
<td>Derwent World Patents Index Subscriber</td>
</tr>
</tbody>
</table>

A list of STN databases with the NPS feature: http://www.stn-international.com/nps_databases.html
Numeric data identification and normalization

- Numbers and their units are identified within the text and made fully numerically searchable
  - 1,800 chemical and physical property unit variants are identified, normalized and indexed
  - Both exact values and ranges

- Identified original data are normalized to base units and indexed for searching
  - 55 numeric property search fields are available

Numeric property search fields and base units:
http://www.stn-international.com/pqscitech_nps.html
The resulting CeO₂ particle size measured by x-ray diffraction were in the range of 10 to 30 nm.

Fig. 1 shows typical nano particles in a sample milled for 6 hours. In a second experiment a 1 litre attrition mill was used for milling the mixture....In addition it is widely accepted that the existence of a so-called 'limiting particle size' limits the practical minimum particle size that can be attained by grinding to values greater than 100 nm, irrespective of the type of ball mill employed.
Numeric property data can be searched within all English-language text fields

- Numeric search terms can be combined with text-based search terms of interest
  - Using standard text-based proximity operators
  - Specifying text fields of interest, e.g. abstract (/AB)

- Flexible data input options are available
  - 55 chemical and physical numeric fields
  - Ranges, exact values and tolerances
  - A wide variety of STN search units

Search unit ➔ Base unit ➔ Original unit
Searching using the STN units system

• All values searched using accepted units are automatically converted for searching
  – E.g. 100 °C → 373.15 K

• SET UNIT to change default search units
  – E.g. => SET UNIT TEMP=F DEN=LB/FT**3 PERM
  – HELP SET UNIT for instructions

• D UNIT <field> to see the default and current units for an individual property
  – E.g. => D UNIT TEMP
  – D UNIT ALL to see the complete list
Valid units systems for searching

CGS The centimeter-gram-second system
ENG Customary U. S. Engineering units
FPS The foot-pound-second system
MKS The meter-kilogram-second system
SI Systeme Internationale (International System), based on the MKS system
STN Customary units based on the SI system

Tip: Use e.g. SET UNITS ALL=CGS to convert all units to the centimeter-gram-second system.
Numeric operators

- within a range
>

greater than

<

less than

>=

greater or equal to

<=

less or equal to
Proximity Operators

(#W) # words apart – in query order
(#A) # words apart – in either order

Tip: Providing textual context for numeric search terms using proximity operators greatly improves the relevance of search hits.
Search example: Particle size

1-100 nm. The water-soluble polymer has a weight-average molecular weight of 500-120000. The abrasive is colloidal silica having an average particle size of 1-40 nm based on scattering intensity distribution. ...

KWIC is a free review format for text searches.

* Size (/SIZ) may also be used as a synonym for Length (/LEN).
Search example: Particle size (cont.)

=> FILE WPIX

=> S PARTICLE (3A) SIZE (3A) LEN<=100 NM
L1  35558 PARTICLE (3A) SIZE (3A) SIZ<=100 NM

Flexible search input options.

The base unit for size is meter.

=> S PARTICLE (3A) SIZE (3A) LEN<=0.0000001
L2  35558 PARTICLE (3A) SIZE (3A) LEN<=0.0000001 M

Scientific notation is supported.

=> S PARTICLE (3A) SIZE (3A) LEN<=1.0E-7
L3  35558 PARTICLE (3A) SIZE (3A) LEN<=1.0E-7 M
To stimulate the photodynamic and photothermal activities of the nanocomposites, we used LEDs (405 and 625 nm) and a NIR laser (808 nm), respectively. We observed enhanced inactivation of S. aureus 209 P by nanocomposites in.

The same numeric field may be searched in various contexts, e.g. wavelength or size of particles.
Search example: Block copolymer molecular weight

Here we are searching for a Molecular Weight (/MM) of over 75 kg/mol.

=> FILE PQSCITECH

=> S ?BLOCK?(A) ?POLYMER? (3A) MM>75000
L1      17 ?BLOCK?(3A) ?POLYMER? (S) MM>75000 G/MOL

=> D KWIC

L1    ANSWER 1 OF 17 PQSCITECH COPYRIGHT 2013 ProQuest LCC on STN.
AB    . . . block of a conjugated diene located on at least one of the plurality of arms, and optionally one or more block copolymers comprising at least one block of monovinylaromatic hydrocarbon and at least one block of a conjugated diene, the block copolymer may be selected from linear copolymers, linear triblock copolymers, multiarm coupled block copolymers, and mixtures thereof. The molecular weight of the polymeric composition is in the range from about 100 kg/mol to about 400 kg/mol.

* /MM = Molar Mass.
Step-2: 1-methyl-6-(trifluoromethyl)-1H-indole-2-carboxylic acid A mixture of ethyl 1-methyl-6-(trifluoromethyl)-1H-indole-2-carboxylate (90 mg, 0.33 retool) and 2 mol/L aqueous sodium hydroxide solution (0.42 mL, 0.83 retool) in methanol (2 mL) was stirred at room temperature for 2 hours. Then, 2 mol/L. . .
Search example: Effective dose

Here we are looking for an effective dose (ED\textsubscript{50}) of 1-100 mg/kg using the dosage (/DOS) field.

Note: The default search unit for dosage is mg/Kg.
Search example: Multifile NPS search

=> FILE COMPENDEX PQSCITECH

=> S (NANOFILT? OR NANO(3A)FILT?) (10A)15–30 NM/LEN
L1  4 FILE COMPENDEX
L2  17 FILE PQSCITECH

TOTAL FOR ALL FILES
L3  21 (NANOFILT? OR NANO(3A) FILT?) (10A) 15–30 NM/LEN

=> DUP REM L3
PROCESSING COMPLETED FOR L3
L4  18 DUP REM L3 (3 DUPLICATES REMOVED)
    ANSWERS '1–4' FROM FILE COMPENDEX
    ANSWERS '5–18' FROM FILE PQSCITECH

=> FOCUS L4
PROCESSING COMPLETED FOR L4
L5  18 FOCUS L4 1–

NPS may also be used in a multifile environment.

This example features:
SET MSTEPS ON
SET DUPORDER FILE

Standard STN multifile tools, e.g. relevance-rank with FOCUS, may be used.
Search example: Multifile NPS search (cont.)

=> D KWIC 1-2

L5  ANSWER 1 OF 18 PQSCITECH COPYRIGHT 2013 ProQuest LCC on STN.
AB  . . . (B19V) and torque teno virus (TTV). Virus removal was
investigated with down-scale experiments performed with sequential
steps of 35-nm and 15-nm nanofiltrations of products spiked with
virus DNA-positive sera. Viral loads were determined by real-time
PCRs. The 15-nm nanofiltration removed more than 4.0 B19V log from
all the products, TTV was reduced of more than 3.0 log from albumin
solution and FIX by 35-nm and 15-nm nanofiltrations, respectively,
being viral DNA undetectable after these treatments. Traces of TTV
were still found in PTC after the 15-nm nanofiltration. In
conclusion, nanofiltration can be efficacious in removing small naked
viruses but, since viruses with similar features can differently
respond to the treatment, . . .

L5  ANSWER 2 OF 18 PQSCITECH COPYRIGHT 2013 ProQuest LCC on STN.
AB  . . . objective was to develop a manufacturing process for factor
VIII (FVIII) including two complementary steps of viral
inactivation/elimination. Methods A 35-15 nm nanofiltration step was
added to a former FVIII manufacturing process that included
solvent/detergent (S/D) treatment to generate a new FVIII
concentrate. . . . of FVIII, as well as virus/transmissible
spongiform encephalopathy reduction factors were assessed. Results
Using an innovative approach, FVIII was successfully nanofiltered at
35-15 nm, while the biological properties of the active substance
were unmodified. FVIII coagulant and antigen content for Factane
registered and. . .
### Search example: Unit conversion

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>=&gt; FILE COMPENDEX</code></td>
<td>The base unit for pressure (/PRES) is Pascal (Pa).</td>
</tr>
<tr>
<td><code>=&gt; S 100000 - 200000/PRES</code></td>
<td>Values in other accepted search units, e.g. Bar (bar), are automatically converted.</td>
</tr>
<tr>
<td><code>L1  23490 100000 PA - 200000 PA /PRES</code></td>
<td></td>
</tr>
<tr>
<td><code>=&gt; S 1 - 2 BAR/PRES</code></td>
<td>Use SET UNIT to change the default search unit, e.g. from Pascal to Bar.</td>
</tr>
<tr>
<td><code>L2  23490 1 - 2 BAR/PRES</code></td>
<td></td>
</tr>
<tr>
<td><code>=&gt; SET UNIT PRES=BAR</code></td>
<td></td>
</tr>
<tr>
<td><code>SET COMMAND COMPLETED</code></td>
<td></td>
</tr>
<tr>
<td><code>=&gt; S 1 - 2/PRES</code></td>
<td></td>
</tr>
<tr>
<td><code>L3  23490 1 BAR - 2 BAR /PRES</code></td>
<td></td>
</tr>
</tbody>
</table>
The Bar search (L3) retrieves answers in several original units (e.g. torr, psi, atm, bar).

<table>
<thead>
<tr>
<th>L3</th>
<th>ANSWER ... OF 23490 COMPENDEX COPYRIGHT 2013 EEI on STN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>dosage was 600 g/t, pulp density was 20 per cent, superficial gas velocity was 1.4 cm/s, and circulating pressure was <strong>0.20 MPa</strong>. The results indicate that the FCSMC technique is effective in removing the unburned carbon from the fly ash, which. . .</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L3</th>
<th>ANSWER ... OF 23490 COMPENDEX COPYRIGHT 2013 EEI on STN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>The solubility and absorption rate of CO2 in diethanolamine (DEA) promoted potassium carbonate (K2CO3) aqueous solution were measured at <strong>1 atm</strong>, with temperatures ranging from 328.15 to 343.15K. The influence of the mass fractions of DEA (w) on the solubility, CO2. .</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L3</th>
<th>ANSWER ... OF 23490 COMPENDEX COPYRIGHT 2013 EEI on STN.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>different pressures were conducted and compared with working in atmosphere. The experimental results show that the device working in atmosphere (760 Torr) had a maximum output power of 200.28 .mu.W with a 12.658 VP-P output voltage at. . .</td>
</tr>
</tbody>
</table>
Friction Stir welding has been attempted to study the feasibility of FSW between aluminium sheet (AA 6061) of 2 mm thick and Zinc coated steel (HIF-GA) sheet of 1 mm thick in lap joint configuration. The interfacial area of dissimilar welds. . .

Friction stir welding was used to weld 2.75 mm thick 2519A aluminum sheets. The sheets were welded in conventional condition (in air) and flowing water condition. The influence of cooling conditions on the. . .
Search example: Open ranges

=> FILE COMPENDEX

=> S VOLT>0.5
L1 120255 VOLT>0.5 V

=> D KWIC 1-2

L1 ANSWER 1 OF 120255 COMPENDEX COPYRIGHT 2013 EEI on STN.
AB . . . focal point was measured, and the measurement revealed that the device can produce a peak pressure of \(2.32 \pm 0.81\) MPa at 2 kV discharge voltage, \(3.69 \pm 1.06\) MPa at 3 kV, \(5.67 \pm 2.44\) MPa at 4 kV, and \(7.27 \pm 2.33\) MPa at 5 kV. COPYRGT. 2013 by JSME.

L1 ANSWER 2 OF 120255 COMPENDEX COPYRIGHT 2013 EEI on STN.
AB . . . cd/A, 15 420 cd/m2, respectively. The commission international eclairage (CIE) color coordinates of the device vary from \((0.34, 0.44)\) at 4 V to \((0.27, 0.33)\) at 12 V. In order to further improve the performance of WOLED, the BPhen is used as exciton block-layer to the WOLED, . . .
Search example: Open ranges (cont.)

Open range searches may also exceed system limits.

Restricting the range allows the search to complete.

Conclusion: it’s typically a good idea to search a closed range, even if you have an open range in mind.
Search example: Exact values

An exact value (L1).

A closed range (L2).

Note: Using exact values (L1) may miss potentially relevant documents (L3).

Conclusion: it’s typically a good idea to search a closed range, even if you have an exact value in mind.
== FILE WPIX ==

== S 99-101 C/TEMP ==
L1 310496 100 C/TEMP

== S 100+-1 C/TEMP ==
L2 310496 100+-1 C/TEMP

== SET TOLERANCE TEMP=1 ==
SET COMMAND COMPLETED

== S 100/TEMP ==
L3 310496 100+-1 C/TEMP

== SET TOLERANCE TEMP=1% ==
SET COMMAND COMPLETED

== S 100 C/TEMP ==
L4 310496 100 +1% C/TEMP

== S 200/TEMP ==
L5 231593 200 C +1% /TEMP

This closed range (L1) could be searched with a tolerance of ±1 (L2) as well.

Use SET TOLERANCE to automatically turn exact values into ranges. Use == SET TOL TEMP=1 PERM == to save this setting for your Login ID.

Percent-based tolerances can also be used (L4, L5).

1% of 100 = 1, so L4 = 99 - 101 °C.

1% of 200 = 2, so L5 = 198 - 202 °C.
Search example: Percent alloy composition

=> FILE PCTFULL CNFULL AUPATFULL CANPATFULL WPIX

=> S ALLOY (S) BISMUTH (1A) PER<60 (S) LEAD (1A) PER>20 (S)
   TIN (S) CADMIUM
L1          21  FILE PCTFULL
L2          18  FILE CNFULL
L3           4  FILE AUPATFULL
L4          31  FILE CANPATFULL
L5           12  FILE WPIX

TOTAL FOR ALL FILES
L5          86  ALLOY (S) BISMUTH (1A) PER<60 (S) LEAD (1A) PER>20
   (S) TIN (S) CADMIUM

=> FSORT L5
L6           86  FSO L5
  8 Multi-record Families   Answers 1-19
    Family 1              Answers 1-3
          . . .            . . .
    Family 8              Answers 19-21
65 Individual Records   Answers 22-86
0 Non-patent Records

Searching for percent (/PER) of metals in an alloy composition.
A compound facing material comprising liquid metal that in this invention stated 2 may select the different liquid metal, like the low melting point gallium base alloy and sodium potassium under alloy metal gallium and different allocated proportion as well as included the indium Wood's metal (bismuth 50%, lead 25%, tin 12.5%, cadmium 12.5%) and so on.

to be possible to select the different liquid metal, like the metal gallium, not the low melting point gallium base alloy and sodium potassium under alloy same allocated proportion as well as includes the indium Wood's metal (bismuth 50%, lead 25%, tin 12.5%, cadmium 12.5%) and so on.
Search example: Molybdenum content in ppm

FILE WPIX

S 200E-6 - 300E-6 /PER.EX (3W) (PPM OR PARTS PER MILLION) /BI,BIEX (5A) MOLYBDENUM /BI,BIEX

Scientific notation for the ppm value

D KWIC 1

L1 ANSWER 1 OF 136 WPINDEX COPYRIGHT 2012 THOMSON REUTERS on STN NOV NOVELTY - A lubricant composition contains an organic molybdenum compound (A) (200-2000 ppm), base oil (1-30 %mass) having kinematic viscosity of 25 mm2/second or more at 100 degrees C, and base oil … TECH. … agent and antifoamer. The extreme-pressure agent is zinc dithiophosphate having phosphorus content of 300-800 ppm. The organic molybdenum compound is of formula (I) …
wherein the molybdenum compound is present in an amount to provide 0.5 ppm to 2000 ppm, 1 ppm to 700 ppm or 20 ppm to 250 ppm of molybdenum. ...

Hit found in the CLMEN field of a Chinese publication.
in the acidic solution. Reaction temperature of vanadium pentoxide and reducing agent in the acidic solution is 45-100 degrees C. Reacting time is 0.5-64 hours. The pH value of the acidic solution is 0-6. Pressure of reaction in high pressure kettle is 0.1-50 MPa.

Teflon vacuum pump was turned on and the vacuum was immediately applied to the system. After a total reaction time of 60 minutes the heat was turned off and the flask was backfilled with nitrogen. The reaction mixture was then charged with...
Adding the DWPI claims field (/CLM) may retrieve additional relevant results.

Learn more about DWPI claims coverage here: http://www.stn-international.com/dwpi_table.html

Member. . .
	hereagent is solid sodium methoxide or potassium methoxide or their mixture, the reaction temperature is 70-140 degrees centigrade, the reaction time is 1 to 5 hours, the pressure is -0.085 to -0. MPa, removing reaction generated in the methanol.

[CLAIM 5] Preparation method butyl. . .
Search example: Reaction time (cont.)

=> S REACT? TIME/ADV (5A) TIM<2 HOURS
L4          153 REACT? TIME/ADV (5A) TIM<2 HOURS

=> D KWIC 1–153

More focused searches are possible using DWPI abstract sections, e.g. the advantage (/ADV).

L4 ANSWER ... OF 153 WPIX COPYRIGHT 2012 THOMSON REUTERS on STN

ADVANTAGE - The method can greatly enhance catalytic activity, has reaction time of 1.5 hours and quickly form high molecular weight product at maximum molecular weight of more than 20; has body producing, simple...

L4 ANSWER ... OF 153 WPIX COPYRIGHT 2012 THOMSON REUTERS on STN

ADVANTAGE - The reactor system does not use oxygen, has high temperature heating rate (1000–10000 K/s) and has short reaction time (less than 2 seconds). It is capable of providing short chain low molecular substance product and improves yield and quality of biological oil.
Search example: Reaction time (cont.)

=> S REACT? TIME/ADV (5A) TIM.EX<2 HOURS
L5 137 REACT? TIME/ADV (5A) TIM.EX<2 HOURS

=> S L4 NOT L5
L6 16 L4 NOT L5

=> D KWIC 1-16

Open range hits are not always relevant (L6).

L6 ANSWER ... OF 16 WPIX COPYRIGHT 2012 THOMSON REUTERS on STN
ADV. can be processed for obtaining the Na2Ta2O6 while the hydrothermal reaction temperature is lower than 150 degrees C and the reaction time is less than 8 hours.

L6 ANSWER ... OF 16 WPIX COPYRIGHT 2012 THOMSON REUTERS on STN
ADV. greater than 30 (preferably greater than 50) kg. The process of preparing omeprazole form B is carried out at total reaction time of less than 35 hours; is simple, cost-effective and large scale applicable; and has improved purification step.

Option: exclude indexed open ranges (.EX), as this may help focus the search even further.
SEARCH EXAMPLE: PHYSICAL PROPERTIES (PHP)

=> FILE PQSCITECH

=> S PER/PHP (5A) CAMPHOR
L1  250 PER/PHP (5A) CAMPHOR

=> D KWIC 1-2

L1 ANSWER 1 OF 250 PQSCITECH COPYRIGHT 2013 ProQuest LCC on STN.
AB . . . the engine at a constant speed of 1500ANBrpm and compared with neat CSNO and diesel fuel operations. Among the blends 30% camphor oil blend with CSNO (CMPRO 30), shows good performance on par with diesel fuel operation with respect to brake thermal. . .

L1 ANSWER 2 OF 250 PQSCITECH COPYRIGHT 2013 ProQuest LCC on STN.
AB . . . present study, the chemical constituents of Artemisia fukudo essential oil (AFE) were investigated using GC-MS. The major constituents were a-thujone (48.28%), b-thujone (12.69%), camphor (6.95%) and caryophyllene (6.01%). We also examined the effects of AFE on the production of nitric oxide (NO), prostaglandin E2 (PGE2), tumour necrosis factor. . .
Search example: Physical properties (cont.)

Example 2: Polymer Molecular Weight (MM/PHP).

Poly(styrene-b-2-vinyl pyridine) (PS-b-P2VP) lamellar film which is hydrophobic block hydrophilic polyelectrolyte block polymer of 52 kg/mol -b- 57 kg/mol and PS-b-P2VP film with reactive monomer (RM257) were prepared for photonic gel films. The lamellar stacks, which is alternating.

Example 3: Liposome or Vesicle Size (LEN/PHP).

We describe here a robust flow chamber model that is applied to optimize the properties of 100 nm liposomes targeted to inflamed endothelium.
Typical numeric searches

Searching for **specific properties**.

=> S (LIGHT EMITTING DIODE OR LED) (5A) 620–740 NM /LEN

Searching for **percent values**.

=> S ALLOY AND TIN (1A) PER>90 AND SILVER (1A) 1–10/PER

Presence of **numeric properties**.

=> S PER/PHP (5A) CAMPHOR
Review of numeric search options

- **=> S 50/VOL**
  - L1: 750 50 M**3** /VOL
  - Searching with **default units**.

- **=> S 50-60/VOL**
  - L1: 897 50 M**3** - 60 M**3** /VOL
  - Searching with **closed ranges**.

- **=> S 10-30 ML/VOL**
  - L1: 6440 10-30 ML/VOL
  - Searching with **other units**.

- **=> S TEMP < 5 C**
  - L1: 219653 TEMP<5 C
  - Searching with **open ranges**.

- **=> S 5 MM +-1/LEN**
  - L1: 58825 5 MM +-1/LEN
  - Searching with **tolerances**.

- **=> S 5 MM +-5%/LEN**
  - L1: 43389 5 MM +- 5%/LEN
  - Searching with **tolerances in %**
Summary

- Numeric property search (NPS) is available in several patent and bibliographic files
- Search for specific units, percentages, or the presence of numeric values within the text
- Combine keyword and numeric terms within the text using standard STN proximity operators

Numeric property search fields and base units: http://www.stn-international.com/pqscitech_nps.html
Resources

- General information about physical properties given in base or derived SI units
  http://www.bipm.org/en/si

- General Information on the STN Units System
  http://www.cas.org/support/stngen/doc/stnunits/

- A list of STN databases with the NPS feature:
  http://www.stn-international.com/nps_databases.html
## Appendix: Indexed Properties

<table>
<thead>
<tr>
<th>Field Code</th>
<th>Property</th>
<th>Base Unit</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOS</td>
<td>Amount of substance</td>
<td>Mol</td>
<td>mol</td>
</tr>
<tr>
<td>BIR</td>
<td>Bit Rate</td>
<td>Bit / Second</td>
<td>bit/s</td>
</tr>
<tr>
<td>BIT</td>
<td>Stored Information</td>
<td>Bit</td>
<td>bit</td>
</tr>
<tr>
<td>CAP</td>
<td>Capacitance</td>
<td>Farad</td>
<td>F</td>
</tr>
<tr>
<td>CDN</td>
<td>Current Density</td>
<td>Ampere / Square Meter</td>
<td>A/m²</td>
</tr>
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<td>CMOL</td>
<td>Molarity, Molar Concentration</td>
<td>Mol / Liter</td>
<td>mol/L</td>
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<td>Density, Mass Concentration</td>
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<td>Dose Equivalent</td>
<td>Sievert</td>
<td>Sv</td>
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<td>DOS</td>
<td>Dosage</td>
<td>Milligram / Kilogram</td>
<td>mg/kg</td>
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<tr>
<td>DV</td>
<td>Viscosity, dynamic</td>
<td>Pascal x Second</td>
<td>Pa s</td>
</tr>
<tr>
<td>ECH</td>
<td>Electric Charge</td>
<td>Coulomb</td>
<td>C</td>
</tr>
<tr>
<td>ECD</td>
<td>Electric Charge Density</td>
<td>Coulomb / Square Meter</td>
<td>C/m²</td>
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<tr>
<td>ECO</td>
<td>Electrical Conductivity</td>
<td>Siemens / Meter</td>
<td>S/m</td>
</tr>
<tr>
<td>ELC</td>
<td>Electric Current</td>
<td>Ampere</td>
<td>A</td>
</tr>
<tr>
<td>ELF</td>
<td>Electric Field</td>
<td>Volt / Meter</td>
<td>V/m</td>
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<tr>
<td>ENE</td>
<td>Energy</td>
<td>Joule</td>
<td>J</td>
</tr>
<tr>
<td>ERE</td>
<td>Electrical Resistivity</td>
<td>Ohm x Meter</td>
<td>ohm m</td>
</tr>
<tr>
<td>FOR</td>
<td>Force</td>
<td>Newton</td>
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### Appendix: Indexed Properties (cont.)

<table>
<thead>
<tr>
<th>Field Code</th>
<th>Property</th>
<th>Base Unit</th>
<th>Symbol</th>
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</thead>
<tbody>
<tr>
<td>FRE</td>
<td>Frequency</td>
<td>Hertz</td>
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<tr>
<td>IU</td>
<td>International Unit</td>
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<tr>
<td>KV</td>
<td>Viscosity, kinematic</td>
<td>Square Meter/Second</td>
<td>m2/s</td>
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<td>LEN</td>
<td>Length</td>
<td>Meter</td>
<td>m</td>
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<td>LUMI</td>
<td>Luminous Intensity</td>
<td>Candela</td>
<td>cd</td>
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<tr>
<td>LUME</td>
<td>Luminous Emittance, Illuminance</td>
<td>Lux</td>
<td>lx</td>
</tr>
<tr>
<td>LUMF</td>
<td>Luminous Flux</td>
<td>Lumen</td>
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<td>M</td>
<td>Mass</td>
<td>Kilogram</td>
<td>kg</td>
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<td>MCH</td>
<td>Mass to Charge Ratio</td>
<td>none</td>
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<td>MFR</td>
<td>Mass Flow Rate</td>
<td>Kilogram/Second</td>
<td>kg/s</td>
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<td>MFD</td>
<td>Magnetic Flux Density</td>
<td>Tesla</td>
<td>T</td>
</tr>
<tr>
<td>MM</td>
<td>Molar Mass, Molecular Weight</td>
<td>Gram / Mol</td>
<td>g/mol</td>
</tr>
<tr>
<td>MOLS</td>
<td>Molality of Substance</td>
<td>Mol / Kilogram</td>
<td>mol/kg</td>
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<tr>
<td>MVR</td>
<td>Melt Volume Rate</td>
<td>none</td>
<td>g/10 min</td>
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<td>NUC</td>
<td>Nutrition Content</td>
<td>none</td>
<td>g/100 kcal</td>
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<td>PER</td>
<td>Percent</td>
<td>none</td>
<td>%</td>
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<tr>
<td>PERA</td>
<td>Permittivity, Absolute</td>
<td>Farad / Meter</td>
<td>F/m</td>
</tr>
<tr>
<td>PHV</td>
<td>ph Value</td>
<td>pH</td>
<td>pH</td>
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<td>Power</td>
<td>Watt</td>
<td>W</td>
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<td>PRES</td>
<td>Pressure</td>
<td>Pascal</td>
<td>Pa</td>
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<tr>
<td>RAD</td>
<td>Radioactivity</td>
<td>Becquerel</td>
<td>bq</td>
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### Appendix: Indexed Properties (cont.)

<table>
<thead>
<tr>
<th>Field Code</th>
<th>Property</th>
<th>Base Unit</th>
<th>Symbol</th>
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</thead>
<tbody>
<tr>
<td>RES</td>
<td>Electrical Resistance</td>
<td>Ohm</td>
<td>Ohm</td>
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<tr>
<td>RSP</td>
<td>Rotational Speed</td>
<td>Revolution / Minute</td>
<td>rpm</td>
</tr>
<tr>
<td>SAR</td>
<td>Area</td>
<td>Square Meter</td>
<td>m²</td>
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<tr>
<td>SOL</td>
<td>Solubility</td>
<td>Gram / 100 gram</td>
<td>g/100g</td>
</tr>
<tr>
<td>STSC</td>
<td>Surface Tension, Spring Constant</td>
<td>Joule / Square Meter</td>
<td>J/m²</td>
</tr>
<tr>
<td>TCO</td>
<td>Thermal Conductivity</td>
<td>Watt / Meter x Kelvin</td>
<td>W/m K</td>
</tr>
<tr>
<td>TEMP</td>
<td>Temperature</td>
<td>Kelvin</td>
<td>K</td>
</tr>
<tr>
<td>TIM</td>
<td>Time</td>
<td>Second</td>
<td>s</td>
</tr>
<tr>
<td>VEL</td>
<td>Velocity</td>
<td>Meter / Second</td>
<td>m/s</td>
</tr>
<tr>
<td>VELA</td>
<td>Velocity, angular</td>
<td>Radian / Second</td>
<td>rad/s</td>
</tr>
<tr>
<td>VLR</td>
<td>Volumetric Flow Rate</td>
<td>Cubic Meter / Second</td>
<td>m³/s</td>
</tr>
<tr>
<td>VOL</td>
<td>Volume</td>
<td>Cubic Meter</td>
<td>m³</td>
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<tr>
<td>VOLT</td>
<td>Voltage</td>
<td>Volt</td>
<td>V</td>
</tr>
</tbody>
</table>

**Examples for additional units:**

**ENE (Energy):**
- With base unit Joule (J)
- Additional units: N m, W s, eV, erg, Btu, cal, ft-lbf

**PRES (Pressure):**
- With base unit Pascal (Pa)
- Additional units: N/m², dyn/cm², bar, atu, mmHg, Torr, inHg, lb/in², kg/m²
For more information …

CAS
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www.cas.org

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www.stn-international.de