

Technical Information Papers

Numerical Listing

NOTE: This list was updated May 11, 2012.

(wd) = withdrawn TIP

Coating and Graphic Arts 0100

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|--|
| 0102-01 | (wd - 1997) | Literature references on the measurement of water retention of paper coatings |
| 0104-01 | (wd - 1997) | Specific gravity of soy protein solutions |
| 0104-02 | (wd - 1999) | Binder effects on coated gloss literature review |
| 0106-01 | 2002 | Physical data of calcium carbonate-water suspensions |
| 0106-02 | 2005 | Physical data of hydrous kaolin-water suspensions |
| 0106-03 | (wd - 2001) | Physical properties of anatase slurry |
| 0106-04 | (wd - 2001) | Guidelines for reporting of SQC data by pigment suppliers to the paper and paperboard industries |
| 0106-05 | 2010 | Calcium carbonate pigment index |
| 0106-06 | 2011 | Kaolin clay pigment index |
| 0106-07 | (wd - 2011) | Titanium dioxide pigment index |
| 0106-08 | (wd - 2001) | Specialty coating pigments index |
| 0106-09 | 2006 | Physical data of calcined kaolin-water suspensions |
| 0108-01 | (wd - 2001) | Definitions of graphic arts terms |
| 0108-02 | (wd - 1999) | TAPPI OCR glossary |
| 0108-03 | (wd - 1999) | Electrophotography definitions and standardizations of terms |
| 0110-01 | (wd - 1999) | Factors to be considered in selecting screening media for coating processes |
| 0110-02 | (wd - 2000) | Viscosity of coating colors at high shear rates |

Polymers, Laminations, Adhesives, Coatings, and Extrusions 0200

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|--|
| 0200-01 | 2011 | Guidelines for web conveyance and winding tension levels |
| 0206-01 | (wd - 1997) | Hot melt coated/saturated corrugated board end use profile |

Corrugated Packaging 0300

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|---|
| 0301-01 | 2008 | Corrugated boxplant - list of potential hazards |
| 0302-01 | (wd - 2002) | Prefeeder quick reference specifications (English Units) |
| 0302-02 | (wd - 1999) | Corrugator steam systems |
| 0302-03 | (wd - 2002) | Corrugator roll/pressure roll journal failures |
| 0302-04 | 2001 | An alternative method for designating flute sizes |
| 0303-01 | (wd - 1996) | Computerization of maintenance department |
| 0303-02 | (wd - 1996) | Engineering economics using discounted cash flow |
| 0304-01 | 2008 | Procedure for setting up a raw material trial on the corrugator |

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|---------|-------------|--|
| 0304-02 | 2008 | Box plant quality measurement: why test? |
| 0304-03 | (wd – 1992) | Corrugated box plant quality targets |
| 0304-04 | 2001 | Corrugated caliper: why is it so important? |
| 0304-05 | (wd - 1999) | Quality assurance of a corrugating adhesive: starch gelatinization temperature |
| 0304-06 | 2002 | Starch adhesive preparation and distribution systems: housekeeping |
| 0304-07 | 2010 | Cross direction warp in corrugated board |
| 0304-08 | 2011 | Some questions and answers on gel temperatures and on the gel temperature test for corrugating adhesives |
| 0304-09 | 2009 | The edge crush test (ECT): its relationship to box compression and its derivation from containerboard edge stiffness |
| 0304-10 | 2002 | Troubleshooting a glue lap problem |
| 0304-11 | 2002 | Utilizing statistical process control techniques to assist in meeting specification at finishing crush process control points to the paper and paperboard industries |
| 0304-12 | 2002 | Obtaining combined board caliper off the corrugator for use in statistical process control procedures |
| 0304-13 | 2003 | Statistical process control - procedures for charting warp |
| 0304-14 | 2002 | Statistical process control of starch gelatinization temperature |
| 0304-15 | 2002 | Statistical process control of starch viscosity |
| 0304-16 | 2003 | Evaluating glue lap adhesives |
| 0304-17 | 2001 | Addendum to <i>Corrugating Defect Terminology Manual</i> - defects related to the use of fingerless singlefacers |
| 0304-18 | 2011 | Viscosity reading procedure for flexographic corrugated inks |
| 0304-19 | 2008 | Curtain coating weight test |
| 0304-20 | 2009 | Calibration of flexible beam crush tester |
| 0304-21 | (wd – 2004) | Caliper measurement of corrugated board |
| 0304-22 | 2006 | Starch adhesive trial |
| 0304-23 | 2008 | Statistical process control pin adhesion |
| 0304-24 | 2009 | Calibration and maintenance of the burst tester |
| 0304-25 | 2010 | Understanding formaldehyde management |
| 0304-26 | 2010 | Common curtain coating problems: causes, detection and correction |
| 0304-27 | 2003 | Green peel bond test at the corrugator |
| 0304-28 | (wd - 1999) | Rapid determination of moisture content in starch products |
| 0304-29 | (wd - 2003) | Petroleum waxes used in the corrugated industry |
| 0304-30 | 2008 | Calibration and maintenance of the manually operated micrometer |
| 0304-31 | 2004 | Splicer defects and cures |
| 0304-32 | 2009 | Causes and corrections of common corrugator bonding problems |
| 0304-33 | 2006 | Proper methods of measuring starch adhesive viscosity |
| 0304-34 | 2002 | Statistical process control: friction - slide angle |
| 0304-35 | 2003 | Procedure for utilizing statistical control techniques to monitor the tare weight of a run of boxes |
| 0304-36 | (wd - 1999) | Liquid caustic soda for starch adhesive preparation |
| 0304-37 | 2009 | How to prevent score cracking in a boxplant |
| 0304-38 | 2011 | Material safety data sheets - what to look for, how to understand them |
| 0304-39 | 2008 | In-line coating at the corrugator |
| 0304-40 | 2008 | Techniques for bonding of densified liners |
| 0304-41 | 2003 | Understanding hazardous materials warning labels |
| 0304-42 | 2008 | Go/no go gauge devices for the boxplant |
| 0304-43 | 2011 | High density papers -- what are they? |
| 0304-44 | 2001 | Using washup water as the vehicle in starch based corrugating adhesive |
| 0304-45 | (wd - 2002) | (Renumbered as TIP 0306-20 upon review in 2001) |
| 0304-46 | 2008 | Techniques for running "WRA" (water resistant starch adhesive) |
| 0304-47 | 2007 | Corrugator bearing clearance checks and their impact |
| 0304-48 | (wd -2001) | Guidelines for training laboratory technicians |
| 0304-49 | 2011 | Suggestions for developing a box plant quality manual |
| 0304-50 | 2003 | Techniques to minimize twist warp |
| 0304-51 | (wd – 2004) | A source of information on the German "green laws" |
| 0304-52 | (wd - 2001) | Characteristics of starch (flow properties) |

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|---------|-------------|---|
| 0304-53 | 2003 | Copper sulfate test for corrugator roll wear |
| 0304-54 | (wd - 2004) | Measurement of rub resistance of a printing ink |
| 0304-55 | (wd - 2001) | Corrugated boxplant - list of potential hazards |
| 0304-56 | 2009 | Total indicated runout and its impact on combined board quality |
| 0304-57 | | <i>Not assigned</i> |
| 0304-58 | 2009 | An explanation of the CONEG heavy metal guidelines |
| 0304-59 | 2001 | Important quality parameters of a printing ink |
| 0304-60 | 2008 | A method to proof a flexo printing ink |
| 0304-61 | 2008 | The role of copper in a printing ink |
| 0304-62 | 2004 | Checking the parallel of corrugating rolls with "NCR" paper |
| 0304-63 | 2003 | Determination of moisture in containerboard using a hand held moisture meter |
| 0304-64 | 2011 | How to minimize rolling scores on lightweight and high-performance liners in diecutting operations |
| 0304-65 | 2002 | Conducting a corrugator temperature audit |
| 0304-66 | 2012 | The impact of doublebacker hot plate level on board quality and how to measure it |
| 0304-67 | (wd - 2006) | Reference system for technical information paper use |
| 0304-68 | 2010 | Improved techniques to measure corrugator glue machine meter gaps |
| 0304-69 | 2011 | Understanding wet strength: what are MRA, WRA, and WPA? |
| 0304-70 | 2006 | Short-run statistical process control: a basic charting method |
| 0304-71 | 2004 | How to perform a gauge (instrument) repeatability and reproducibility study (measurement/range type) |
| 0304-72 | 2008 | Critical properties to consider when unitizing |
| 0304-73 | 2009 | Checking for coating wear on corrugating rolls |
| 0304-74 | 2007 | Understanding and troubleshooting hot melt adhesives |
| 0304-75 | 2010 | Checking the flute depth of corrugating rolls |
| 0305-01 | (wd - 2000) | A two-minute lesson in computers |
| 0305-02 | 2004 | Computer-assisted machinery |
| 0305-03 | (wd - 1999) | Computer-assisted machinery glossary |
| 0305-04 | 2006 | Introduction to flexo folder gluer/rotary diecutter TIPS |
| 0305-05 | (wd - 1999) | Computer-assisted setup for flexo folder gluers |
| 0305-06 | 2007 | Machinery considerations and selection |
| 0305-07 | 2007 | Purchase order |
| 0305-08 | (wd - 2001) | Automatic strapping units |
| 0305-09 | (wd - 2001) | Automatic feeders |
| 0305-10 | (wd - 2001) | Palletizers |
| 0305-11 | (wd - 2001) | Wastewater treatment equipment |
| 0305-12 | 2004 | Installation |
| 0305-13 | 2010 | Project leader |
| 0305-14 | (wd - 1999) | Printing plates |
| 0305-15 | (wd - 1999) | Ordering printing plates |
| 0305-16 | (wd - 1999) | Flexographic ink |
| 0305-17 | (wd - 2004) | Importance of anilox rolls |
| 0305-18 | 2004 | Proper use of pull bands |
| 0305-19 | (wd - 2001) | Plate mounting systems |
| 0305-20 | (wd - 1999) | Preplanning checklist for rotary die cutting |
| 0305-21 | 2008 | Ordering cutting dies |
| 0305-22 | (wd - 1999) | Slot design for good stripping |
| 0305-23 | 2007 | Rotary cutting die maintenance |
| 0305-24 | (wd - 1999) | Storage racks for rotary cutting dies |
| 0305-25 | 2008 | Buying, storing, and handling flexo folder gluer/rotary diecutter adhesives |
| 0305-26 | 2008 | Introduction to the flow chart |
| 0305-27 | 2004 | In-process checklist |
| 0305-28 | (wd - 2001) | Setup and run checklist |
| 0305-29 | (wd - 1994) | Productivity |
| 0305-30 | 2004 | The need for planned maintenance |
| 0305-31 | 2004 | Daily and month-to-date status report |

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| 0305-32 | 2007 | Housekeeping at order and shift change and weekly |
| 0305-33 | 2007 | Cleanup procedures for flexo folder gluer/rotary diecutters |
| 0305-34 | 2008 | Daily, weekly, and monthly maintenance checklists |
| 0305-35 | 2007 | Rotary diecutter urethane anvil maintenance |
| 0305-36 | (wd - 2007) | Common operating problems and probable solutions: introduction |
| 0305-37 | (wd - 2001) | Feed section |
| 0305-38 | 2008 | Troubleshooting the printing section |
| 0305-39 | 2008 | Troubleshooting the diecutting section |
| 0305-40 | 2011 | Reduction or elimination of ink and/or varnish smear when printing and rotary die cutting in one pass |
| 0305-41 | (wd - 2001) | Slotting section |
| 0305-42 | 2007 | Folding section |
| 0305-43 | 2007 | Extruded glue mechanism supplement |
| 0305-44 | 2007 | Counter ejector section |
| 0305-45 | 2007 | Squaring flap cut (center special) boxes |
| 0305-46 | 2011 | Stacking off the rotary diecutter |
| 0305-47 | 2011 | Multiple-out rotary diecut stacking |
| 0305-48 | (wd - 1999) | Divider rails for multiple-out rotary diecut stacking |
| 0305-49 | 2007 | Checklist: preparing diecuts for shipment |
| 0305-50 | (wd - 2001) | The state of the art of feeders |
| 0305-51 | (wd - 2001) | Folder-gluers |
| 0305-52 | (wd - 2001) | Counter ejectors |
| 0305-53 | 2006 | Machinery considerations and selection: yoked scoring slotting section |
| 0305-54 | 2009 | Material handling considerations for flexo folder gluers |
| 0306-01 | (wd - 1997) | The use and care of ink transfer rolls |
| 0306-02 | 2005 | Computer assisted mounting systems |
| 0306-03 | (wd - 2007) | Photopolymer plate update |
| 0306-04 | (wd - 1996) | Improved water washable ink drying on soft anvil rotary die cutters |
| 0306-05 | (wd - 1992) | Glossary of flexographic terms |
| 0306-06 | 2007 | Drying and curing techniques for in-line flexographic printing |
| 0306-07 | (wd - 1999) | SPC as it applies to corrugated flexo presses |
| 0306-08 | (wd - 2000) | Automatic viscosity controllers for flexo inks |
| 0306-09 | 2008 | Ink metering systems for corrugated flexo presses |
| 0306-10 | (wd - 2001) | Instruments for handling color |
| 0306-11 | 2007 | Quality techniques using existing equipment |
| 0306-12 | (wd - 1998) | Anilox rolls: How do we keep them clean without harming them? |
| 0306-13 | (wd - 2004) | Mounting procedures & equipment |
| 0306-14 | (wd - 2003) | Laser anilox cell configurations and angles |
| 0306-15 | 2007 | Identifying anilox roll volume measuring equipment |
| 0306-16 | 2005 | Guideline for direct contact printing bar code symbols on corrugated |
| 0306-17 | 2009 | Overview of the selection process for a laser engraved ceramic anilox roll |
| 0306-18 | 2008 | Cleaning anilox rolls: procedures and options |
| 0306-19 | (wd - 2005) | Flat mounting techniques |
| 0306-20 | 2008 | A guide to proper wipe roll selection for the corrugated box industry |
| 0308-01 | (wd - 2006) | Determining construction (basis weight) of corrugated board |
| 0308-02 | (wd - 2001) | Edge crush comparison, waxed vs. neckdown |
| 0309-01 | (wd - 1989) | Specific problems and their solutions in corrugating operations |
| 0309-02 | (wd - 2003) | Troubleshooting guide – corrugating |
| 0309-03 | (wd - 1995) | Caliper, compression, and high load presses |

Engineering 0400

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|-----------------------------------|
| 0401-01 | (wd - 2004) | Index of safety resources |
| 0402-01 | (wd - 2001) | Suction roll shell service report |

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| 0402-02 | (wd - 1999) | Digester inspection report |
| 0402-03 | 2010 | Guidelines for corrosion resistant weld metal overlay of digester vessels in alkaline pulping service |
| 0402-04 | 2002 | Clad-steel plate use |
| 0402-05 | (wd) | Chemical resistant brick: chemical and physical properties |
| 0402-06 | (wd) | Mortars for chemical resistant masonry construction: physical properties |
| 0402-07 | (wd) | Chemical resistance of typical mortars for corrosion resistant masonry construction |
| 0402-08 | (wd - 1992) | Plate bonding fatigue testing in a corrosive environment |
| 0402-09 | (wd - 2005) | Rotating bar bending fatigue testing in a corrosive environment |
| 0402-10 | (wd - 2001) | Guide for evaluation of paper machine suction roll shells |
| 0402-11 | 2009 | Liquid penetrant testing of new suction roll shells |
| 0402-12 | (wd - 1997) | Guidelines to assure quality radiography of boiler tubes and pipe weldments in the paper industry |
| 0402-13 | 2010 | Guidelines for specification and inspection of electric resistance welded (ERW) and seamless boiler tube for critical and non-critical service |
| 0402-14 | (wd - 2002) | User guide to zinc and zinc-rich coatings for corrosion protection |
| 0402-15 | 2009 | Field welding of pin studs in black liquor recovery boilers |
| 0402-16 | 2011 | Guidelines for inspection and nondestructive examination of paper machine dryers |
| 0402-17 | 2005 | Weld repairs on new suction roll shells |
| 0402-18 | 2010 | Ultrasonic testing (UT) for tube thickness in black liquor recovery boilers: Part I – Guidelines for accurate tube thickness testing Part II – Default layouts for tube thickness surveys in various boiler zones |
| 0402-19 | 2005 | Guidelines for nondestructive examination of suction roll shells |
| 0402-20 | (wd – 2008) | GTAW root pass welding of 6% molybdenum austenitic stainless steel pipe - open root joint with hand-fed filler |
| 0402-21 | 2008 | Ultrasonic technician performance test for boiler tube inspection |
| 0402-22 | 2008 | Guidelines for batch digester inspections |
| 0402-23 | 2008 | Welding of duplex stainless steels |
| 0402-24 | 2010 | Guide to the use of stainless steel pipe specifications |
| 0402-25 | 2005 | Guidelines for procurement of cast stainless steels for large pumps and valves for the pulp and paper industry |
| 0402-26 | 2005 | Guidelines for welding and inspection of stainless alloy piping |
| 0402-27 | 2010 | Guidelines for inspection of continuous digesters and impregnation vessels |
| 0402-28 | 2007 | Guidelines for inspecting used FRP equipment |
| 0402-29 | (wd – 2008) | Qualification of welding procedures for duplex stainless steels |
| 0402-30 | (wd – 2010) | Inspection for cracking of composite tubes in black liquor recovery boilers |
| 0402-31 | 2006 | Guidelines for evaluating quality of boiler tube butt welds with ultrasonic testing |
| 0402-32 | 2010 | Guidelines for thermal spray coatings installed to prevent corrosion in pulp mill process equipment |
| 0402-33 | 2006 | Guideline for obtaining high quality radiographic testing of butt welds in boiler tubes |
| 0402-34 | 2011 | Paper machine reel-spool journals: guidelines for crack testing and repair or replacement |
| 0402-35 | 2009 | Post-fabrication cleaning of stainless steel in the pulp and paper industry |
| 0404-01 | 2002 | Determination of water removal by wet presses |
| 0404-02 | 2005 | Measurement of dryer condensing rates (batch method) |
| 0404-03 | 2003 | Measurement of dryer condensing rates (continuous method) |
| 0404-04 | 2011 | Recommended tensions in dryer fabrics |
| 0404-05 | 2009 | Methods of evaluating high velocity dryers |
| 0404-06 | (wd - 2001) | Drying and related ventilating terminology |
| 0404-07 | 2010 | Paper machine drying rate |
| 0404-08 | (wd – 2005) | TAPPI drying rate - corrugating medium |
| 0404-09 | (wd – 2005) | TAPPI drying rates of linerboard |
| 0404-10 | (wd - 1994) | Evaporation of water for coated sheet |
| 0404-11 | (wd - 1994) | Evaporation of water for uncoated sheet |
| 0404-12 | (wd – 2005) | TAPPI drying rates of woodfree printing and writing grades |
| 0404-13 | (wd - 1988) | Paper machine drying rate |
| 0404-14 | (wd – 2005) | TAPPI drying rate – bleached board |
| 0404-15 | (wd – 2005) | TAPPI drying rate – newsprint |
| 0404-16 | (wd – 2005) | TAPPI drying rate – kraft papers |

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| 0404-17 | 2009 | Recommended minimum dryer pocket air requirements |
| 0404-18 | 2005 | Measurement of dryer condensing rates (vertical separator method) |
| 0404-19 | 2008 | Press section monitoring |
| 0404-20 | 2004 | Physical characterization of press fabrics: basis weight, air permeability, void volume under loading and pressure uniformity |
| 0404-21 | 2001 | Press fabric record book |
| 0404-22 | 2001 | Press section economic evaluation |
| 0404-23 | (wd - 1993) | Standardization of pressing and drying symbols, nomenclature and units of measurement |
| 0404-24 | 2008 | Recommended operation of dryer section hood air systems |
| 0404-25 | 2009 | Through drying |
| 0404-26 | 2001 | Paper machine clothing performance analysis |
| 0404-27 | 2006 | Press fabric dewatering and conditioning - suction box (Uhle box) design and vacuum requirements |
| 0404-28 | 2007 | Method for evaluating thickness of wet press fabrics |
| 0404-29 | 2004 | Porosity measurement of press felts on the paper machine (HSPT) |
| 0404-30 | (wd - 1990) | Dryer section economics |
| 0404-31 | 2009 | Recommended dryer differential pressures |
| 0404-32 | (wd - 1998) | Felt uniformity impression method |
| 0404-33 | 2012 | Dryer section performance monitoring |
| 0404-34 | (wd - 1994) | Void volume measurement in wet felts |
| 0404-35 | 2009 | Application of dryer bars |
| 0404-36 | 2004 | Paper grade classifications |
| 0404-37 | 2009 | Press roll cover application guidelines |
| 0404-38 | 2009 | Dryer fabric cleaning |
| 0404-39 | 2012 | Dryer surface temperature measurement |
| 0404-40 | (wd - 2005) | TAPPI drying rates of wood-containing paper (excluding newsprint) |
| 0404-41 | 2008 | Granite roll material and surface requirements |
| 0404-42 | (wd - 2005) | TAPPI drying rate - after-size press dryers |
| 0404-43 | 2002 | Water permeability of press fabrics |
| 0404-44 | 2008 | Sheet handling devices |
| 0404-45 | 2002 | Psychrometric charts |
| 0404-46 | 2009 | Techniques for nip impressions |
| 0404-47 | 2011 | Paper machine performance guidelines |
| 0404-48 | 2012 | Terminology for high temperature pressing |
| 0404-49 | 2009 | Yankee dryer steam condensing rates |
| 0404-50 | 2009 | Paper machine room ventilation guidelines |
| 0404-51 | 2005 | Paper machine clothing cleaning and conditioning for recycled fiber use |
| 0404-52 | 2009 | Press section optimization |
| 0404-53 | 2012 | Dandy roll applications |
| 0404-54 | 2012 | Headbox approach piping guidelines |
| 0404-55 | 2006 | Performance evaluation techniques for paper machine vacuum systems |
| 0404-56 | (wd - 2005) | TAPPI drying rate - pulp (can dryers) |
| 0404-57 | 2010 | Troubleshooting cross-machine direction moisture profile problems |
| 0404-58 | 2011 | Steam shower applications at the wet end of the paper machine |
| 0404-59 | 2012 | Methods to minimize sheet rewet in the press section |
| 0404-60 | 2002 | High vacuum sheet dewatering |
| 0404-61 | 2011 | Paper machine shower recommendations |
| 0404-62 | (wd - 2011) | Index of suppliers for press section monitoring |
| 0404-63 | 2011 | Paper machine energy conservation |
| 0404-64 | 2009 | Press fabric guiding |
| 0408-01 | 2007 | Checklist for a properly planned project |
| 0410-01 | (wd - 1993) | Fan pump calculations |
| 0410-02 | 2004 | Flow from a vertical slice |
| 0410-03 | 2004 | Flow from a 45° slice |
| 0410-04 | 2004 | Flow from a nozzle (slice) with inclined upper lip |

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| 0410-05 | 2010 | Head of stock behind slice (head/jet relationships) |
| 0410-06 | (wd - 1997) | Headbox piping system - general design guide |
| 0410-07 | 2005 | Fourdrinier drainage performance evaluation – blow test method |
| 0410-08 | (wd - 1994) | Control of stock jump on a fourdrinier wire |
| 0410-09 | 2010 | Flow determination by chemical method |
| 0410-10 | 2012 | Weirs and flumes |
| 0410-11 | (wd) | Viscosity of coating colors at high shear rates |
| 0410-12 | (wd - 1997) | Pipe friction pressure loss of pulp suspensions: literature review and evaluation of data and design methods |
| 0410-13 | (wd - 1992) | Suggested methods of obtaining pipe friction data for flowing pulp |
| 0410-14 | 2007 | Generalized method for determining the pipe friction loss of flowing pulp suspensions |
| 0410-15 | 2008 | Optimum consistency for pumping pulp |
| 0412-01 | (wd - 1999) | Characteristics of bulk materials |
| 0412-02 | (wd - 2007) | Capacity chart for rotary table chip feeders (17 ft. diameter) |
| 0412-05 | (wd - 2004) | Desired workplace dimensions |
| 0412-06 | (wd - 2004) | Row size specifications for paper roll storage |
| 0412-07 | (wd - 2004) | Biomechanics checklists |
| 0412-08 | (wd - 2005) | Allowed elemental times: fork and grab trucks |
| 0412-09 | (wd - 2007) | Typical task time values - pulpwood handling |
| 0412-10 | (wd - 2004) | Typical task time values - pulp, paper, converting; lift truck operations |
| 0412-11 | (wd - 2004) | Typical task time values - pulpmill, wood chip handling; unload with skid steer |
| 0416-01 | 2011 | Recovery boiler performance calculation - short form |
| 0416-02 | (wd - 2003) | Definitions of black liquor recovery furnace availability |
| 0416-03 | 2011 | Water quality and monitoring requirements for paper mill boilers operating on high purity feedwater |
| 0416-04 | 2005 | Design engineer decisions tree: paper mill boiler feedwater |
| 0416-05 | 2005 | Response to contamination of high purity boiler feedwater |
| 0416-06 | 2010 | Keys to successful chemical cleaning of boilers |
| 0416-07 | 2006 | Evaluating reverse osmosis for treating makeup to the boiler feedwater in a pulp and paper mill |
| 0416-08 | 2009 | Guidelines for replacement of generating bank tubes with expanded joints in two-drum boilers |
| 0416-09 | 2008 | Collection and burning of concentrated noncondensable gases: regulations, design, and operation |
| 0416-10 | 2008 | Stripping of kraft pulping process condensates: regulations, design and operation |
| 0416-11 | 2008 | Recommended test procedure for black liquor evaporators |
| 0416-12 | 2004 | Estimating the first melting temperature of fireside deposits in recovery boilers |
| 0416-13 | 2005 | Water treatment-related opportunities for energy conservation in a paper mill powerhouse |
| 0416-14 | 2011 | Water quality guidelines and monitoring requirements for paper mill boilers operating with softened makeup water |
| 0416-15 | 2005 | Chloride and potassium measurement and control in the pulping and chemical recovery cycle |
| 0416-16 | 2008 | Recovery boiler energy efficiency improvements |
| 0416-17 | 2008 | Sampling procedures for biomass fuel for boiler performance testing |
| 0416-18 | 2008 | Performance test procedure for boilers using biomass as fuel |
| 0416-19 | 2009 | Recovery boiler sootblowers: the basics |
| 0416-20 | 2009 | Recovery boiler sootblowers: practical guidelines |
| 0416-21 | 2009 | Guideline specification for procurement of an economizer for a recovery boiler |
| 0416-22 | 2009 | Guidelines for operating and maintenance practices impacting an economizer on a recovery boiler |
| 0418-01 | (wd - 2001) | Solubility of sodium carbonate in sodium sulfide solutions |
| 0418-02 | 2003 | Recausticizing material balance equations relating to digester requirements |
| 0418-03 | (wd - 2002) | Recommended nomenclature for agitators, mixers and pulpers |
| 0420-01 | (wd - 1997) | Grinding paper mill rolls |
| 0420-02 | (wd – 2007) | Maintenance of covered rolls |
| 0420-03 | (wd - 1997) | Noise survey techniques for noise mapping in pulp and paper mills |
| 0420-04 | (wd - 1997) | Guidelines for stainless steel, bonnetless, flanged, wafer and knife gate valves |
| 0420-05 | (wd - 1997) | Design guide for the selection of rolling contact bearings for paper mill service |
| 0420-06 | (wd – 2007) | Roll crown specifications and definitions |

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| 0420-07 | (wd - 1997) | Guidelines for stainless steel, bonnetless, flanged and butt-weld end wedge gate valves |
| 0420-08 | (wd - 2001) | Mounting, sealing, lubrication, and troubleshooting guide for paper mill rolling contact bearings |
| 0420-09 | (wd - 1997) | Measuring the hardness of rubber-covered rolls |
| 0420-10 | (wd - 1997) | Horizontal end suction centrifugal stock pumps |
| 0420-11 | (wd - 2001) | Guidelines for selection and maintenance of parallel shaft speed reducers with surface hardened gearing |
| 0420-12 | 2005 | Guidelines for measurement of vacuum pump air flow |
| 0420-13 | 2005 | Guidelines for side-entering stock agitators |
| 0420-14 | 2010 | Guide for increasing the maximum allowable working pressure of cast iron, ASME constructed paper machine dryers |
| 0420-15 | 2002 | Nozzle maintenance and clogging |
| 0422-01 | 1996 | Energy checklist: pulp mill |

Paper and Board Manufacture 0500

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|--|
| 0502-01 | 2007 | Paper machine vacuum selection factors |
| 0502-02 | 2005 | Determination of winder sets per reel |
| 0502-03 | 2006 | Reel diameter for various reel spool and roll core sizes |
| 0502-04 | (wd - 1993) | Paper machine production ratio |
| 0502-05 | (wd) | Paper machine production chart (basis: 24 x 6 in.) |
| 0502-06 | (wd - 1993) | Paper machine production chart (basis: 25 x 38 in.) |
| 0502-07 | (wd) | Paper machine production chart [basis: grams per square meter (metric tons)] |
| 0502-08 | (wd) | Paper machine production chart [basis: grams per square meter (tons)] |
| 0502-09 | (wd) | Paper machine production chart (basis: pounds per 1000 sq. feet) |
| 0502-10 | 2001 | Broke loss calculations |
| 0502-11 | 2003 | Weight of newsprint rolls |
| 0502-12 | 2010 | Drainage evaluation by mass measurement |
| 0502-13 | 2010 | Retention definitions |
| 0502-14 | 2010 | Forming section monitoring |
| 0502-15 | 2011 | Selection criteria for wet end ceramics |
| 0502-16 | 2010 | Pilot paper machines |
| 0502-17 | 2008 | Papermaker's formulas |
| 0502-18 | (wd - 2007) | Press section water balance using portable sensors |
| 0502-19 | 2011 | Use of ceramics on the forming section: diagnosing and preventing forming fabric wear |
| 0502-20 | 2012 | Catalog of stock prep pilot plants |
| 0506-01 | (wd - 2001) | Corn starch - water suspensions physical data |
| 0506-02 | (wd - 2001) | Papermakers' alum - properties |
| 0508-01 | (wd - 1996) | Pulp storage capabilities |
| 0508-02 | (wd - 2005) | A glossary of terms used in refining |
| 0508-03 | (wd - 1999) | Bulk density relationships for slushed and shredded paper stock in the consistency range of 15-35% oven dry (o.d.) |
| 0508-04 | (wd - 1999) | Evaluating the performance of a fractionator using fiber length data |
| 0508-05 | (wd - 2001) | Refiner plate intensity |
| 0508-06 | 2005 | Refiner systems, their inspection and maintenance |
| 0508-07 | 2002 | Conical refining intensity |
| 0508-08 | (wd - 2005) | Thick stock and broke screening systems, evaluation, inspection and maintenance |
| 0508-09 | (wd - 2005) | Paper machine approach (head box) screening systems, evaluation, inspection and maintenance |
| 0508-10 | 2007 | An introduction to centrifugal cleaners |

Pulp Manufacture 0600

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|--|
| 0601-01 | (wd) | Density of aqueous sodium sulfide solutions |
| 0601-02 | (wd) | Density of caustic soda solutions |
| 0601-03 | (wd) | Properties of sodium hydroxide: specific gravity of caustic soda at various temperatures |
| 0601-04 | (wd - 2000) | Thermal conductivity of sulfate black liquor |
| 0601-05 | (wd - 1997) | Standard terms used in the alkaline pulping process |
| 0602-01 | (wd - 2002) | Woodyard flume design |
| 0602-02 | (wd - 2008) | Bark content in wood chips |
| 0602-03 | 2005 | Calibration technique for the drum style chip thickness classifier |
| 0603-01 | (wd - 1997) | Typical relationships of baling pressure to bale density of selected paper stocks |
| 0603-02 | 2011 | Stickies definition and classification |
| 0605-01 | 2004 | Grinder pulpstones - cubical contents |
| 0605-02 | 2004 | Pulpstone speed chart |
| 0605-03 | (wd) | Relationship of ground wood freeness and bursting strength |
| 0605-04 | (wd - 2005) | Screening symbols, terminology and equations |
| 0606-01 | (wd - 2003) | Equilibrium solubility of chlorine in water at 1 atm (14.7 psi) |
| 0606-02 | 2002 | Chlorine gas curve |
| 0606-03 | 2006 | Density of chlorine gas |
| 0606-04 | 2002 | Heat of vaporization of liquid chlorine |
| 0606-05 | 2002 | Viscosity of liquid chlorine |
| 0606-06 | | <i>Not assigned</i> |
| 0606-07 | 2006 | Specific heat of caustic soda solutions |
| 0606-08 | 2002 | Relative enthalpy (heat content) of sodium hydroxide solutions |
| 0606-09 | 2002 | Dilution of caustic soda solutions |
| 0606-10 | 2002 | Specific gravity of sodium chloride solutions |
| 0606-11 | 2002 | Viscosity of sodium hydroxide solutions |
| 0606-12 | (wd - 2001) | Equilibrium solubility of chlorine dioxide in water |
| 0606-13 | (wd - 2001) | Specific gravity of sodium chlorate solutions |
| 0606-14 | (wd) | Steam consumption for heating pulp |
| 0606-15 | (wd - 1999) | Physical and chemical properties of hydrogen peroxide (H ₂ O ₂) |
| 0606-16 | (wd - 1999) | Physical and chemical properties of sodium silicate (Na ₂ SiO ₃) |
| 0606-17 | (wd) | Chlorate cell liquor in chlorine dioxide generator feed |
| 0606-18 | (wd - 2001) | The Kubelka and Munk relationship between absorption/scattering coefficients and reflectance |
| 0606-19 | (wd - 2002) | Flow rate for hypochlorite bleach liquor |
| 0606-20 | 2002 | Specific gravity and density of caustic soda solutions |
| 0606-21 | 2008 | Recommended pulp bleaching stage designation method |
| 0606-22 | (wd - 2001) | Measurement and control of bleached pulp color |
| 0606-23 | 2002 | Bleach plant washer efficiency guide |
| 0606-24 | 2010 | Hydrogen peroxide (H ₂ O ₂) safe storage and handling |
| 0606-25 | 2008 | Methanol (CH ₃ OH) safe storage and handling |
| 0606-26 | 2008 | Sulfuric acid (H ₂ SO ₄) safe storage and handling |
| 0606-27 | 2008 | Caustic soda (NaOH) safe storage and handling |
| 0606-28 | 2008 | Gaseous ozone (O ₃) safe handling |
| 0606-29 | 2008 | Bulk oxygen (O ₂) safe storage and handling |
| 0606-30 | 2008 | Chlorine dioxide (ClO ₂) safe storage and handling |
| 0606-31 | 2008 | Sodium chlorate (NaClO ₃) safe handling and storage |
| 0607-01 | 2002 | Sulfur burner gas strength volume |
| 0607-02 | (wd - 2004) | Aqua ammonia |
| 0607-03 | (wd - 2004) | Solubility of ammonia in water |
| 0607-04 | 2002 | Physical and chemical properties of magnesia-base pulping solutions |
| 0607-05 | 2002 | Density of milk of lime solution |
| 0607-06 | 2002 | Solubility of sulfur dioxide |

| | | |
|---------|-------------|--|
| 0607-07 | 2002 | Solubility of sulfur dioxide, Ca(HSO ₃) ₂ solutions |
| 0607-08 | (wd – 2004) | Solubility of sulfur dioxide [lime and NH ₃ base] |
| 0607-09 | 2002 | Solubility of sulfur dioxide in magnesium bisulfite solution |
| 0607-10 | 2002 | Solubility of sulfur dioxide in saturated magnesium bisulfite solution |
| 0607-11 | 2002 | Vapor pressure of sulfur dioxide solutions |
| 0607-12 | 2002 | Vapor pressure of water and sulfur dioxide above sodium bisulfite solutions (25°C) |
| 0607-13 | 2002 | Density of aqueous sodium bicarbonate solution |
| 0607-14 | 2002 | Density of aqueous sodium carbonate solution |
| 0607-15 | 2002 | Specific heat of sodium carbonate solution |
| 0607-16 | 2002 | Vapor pressure of sodium carbonate solution |
| 0607-17 | 2002 | Viscosity of sodium carbonate solution |
| 0607-18 | 2002 | Density of aqueous sodium sulfite solution |
| 0607-19 | 2002 | Sulfite waste liquor concentration |
| 0607-20 | (wd) | Sulfite waste liquor viscosity |
| 0607-21 | 2002 | Boiling point rise of spent sulfite liquors |
| 0607-22 | 2002 | Viscosities of various spent sulfite liquors at 26.7°C and other temperatures |
| 0607-23 | 2002 | Viscosity of a neutral sulfite spent liquor (Ostwald capillary viscometer) |
| 0607-24 | (wd) | Specific gravity of a neutral sulfite spent liquor |
| 0607-25 | 2005 | Definitions of terms in the sulfite pulping process |

Process and Product Quality 0800

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|--|
| 0800-01 | 2012 | Units of measurement and conversion factors |
| 0804-01 | (wd - 1998) | Light sources for evaluating papers including those containing fluorescent whitening agents |
| 0804-02 | (wd - 1998) | Optical measurements terminology (related to appearance evaluation of paper) |
| 0804-03 | (wd - 1998) | Interrelation of reflectance, R_0 ; reflectivity, R_∞ ; TAPPI opacity, $C_{0.89}$; scattering, s ; and absorption, k |
| 0804-04 | (wd - 1998) | The determination of instrumental color differences |
| 0804-05 | (wd - 1998) | Indices for whiteness, yellowness, brightness, and luminous reflectance factor |
| 0804-06 | (wd - 1998) | Photometric linearity of optical properties instruments |
| 0804-07 | (wd - 1998) | Calibration of reflectance standards for hemispherical geometry |
| 0804-08 | (wd - 1998) | Storage of paper samples for optical measurements and color matching |
| 0804-09 | 2001 | Basic guidelines for image analysis measurements |
| 0808-01 | (wd) | Grammage (formerly basis weight) |
| 0808-02 | 2004 | Moisture content of paper: terminology and conversion |
| 0808-03 | 2002 | Equilibrium relative humidities over saturated salt solutions |
| 0808-04 | 2007 | Paper test rooms: design considerations |
| 0808-05 | 2005 | Testing atmospheres simulating end use conditions |
| 0808-06 | 2005 | Relative humidity tables |
| 0809-01 | 2004 | Interconversion of freeness |
| 0810-01 | (wd - 1998) | On-line moisture verification/calibration of infrared moisture sensors |
| 0810-02 | (wd - 1998) | On-line verification of caliper sensors |

Environmental 0900

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|--|
| 0906-01 | (wd - 2000) | White water loss determination |
| 0906-02 | (wd - 1991) | Disposal of mercury wastes from water laboratories |

Finishing and Converting 1000

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|--|
| 1004-01 | 2010 | TAPPI Roll Number for inventory/tracking systems and bar codes |
| 1008-01 | (wd - 1997) | Chart for converting known roll weight of one diameter to equivalent weight of any roll diameter |
| 1008-02* | 2005 | Method for determining length and other properties in rolls of various diameters and basis weights |
| 1008-03 | (wd - 1999) | Techniques for finished splices |

Process Control, Electrical & Information 1100

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|---|
| 1101-01 | 2005 | Calculation and partitioning of variance using paper machine scanning sensor measurements |
| 1101-02 | (wd - 2003) | Tuning guide for basic control loops |
| 1101-03 | (wd - 2007) | Instrument symbols and nomenclature |
| 1102-01 | (wd - 2001) | Regulating systems: definitions of terms |
| 1102-02 | (wd - 2001) | Environmental factors affecting the performance of regulating systems |
| 1102-03 | (wd - 1997) | Selection of motors for barking drum drives |
| 1102-04 | (wd - 1997) | Selection of chipper drives |
| 1102-05 | (wd - 1997) | Refiner drive motors torque and thrust requirements |
| 1102-06 | (wd - 1998) | Power requirements of cylinder machines |
| 1102-07 | (wd - 1998) | Power requirements of fourdrinier machines |
| 1102-08 | (wd - 1999) | Power requirements of yankee tissue machines |
| 1102-09 | (wd - 1998) | Power transmitting ability of fourdrinier rolls |
| 1102-10 | (wd - 1997) | End thrust problems of flexibly coupled electric motors |
| 1102-11 | (wd - 1999) | Calculation of voltage dips on motor starting |
| 1102-12 | (wd - 1997) | Guide to recommendations for color coding electrical control and power cable jackets |
| 1102-13 | (wd - 1997) | Recommended electrical wiring practice for automated control & regulating systems |
| 1102-14 | (wd - 1999) | Checklist for industrial electrical distribution |
| 1102-15 | (wd - 1999) | Winder power requirements |
| 1102-16 | (wd - 1997) | Selection of motors for centrifugal pump drives |
| 1103-01 | | Not currently assigned; was assigned in error in 1992; see TIP 1101-03 |
| 1103-02 | (wd - 1998) | Millwide guidelines |
| 1103-03 | (wd - 2001) | Graphic development guidelines for first-time users |

Nonwovens 1200

| <u>TIP #</u> | <u>Publication</u> | <u>Title</u> |
|--------------|--------------------|------------------------------|
| 1205-01 | (wd - 2001) | Acrylic fibers for nonwovens |
| 1205-02 | 2008 | Cotton in nonwovens |

* Excel Spreadsheet to accompany 1008-02 available from TAPPI PRESS